AUGUST 1951

PLEASE ROUTE THIS COPY TO	
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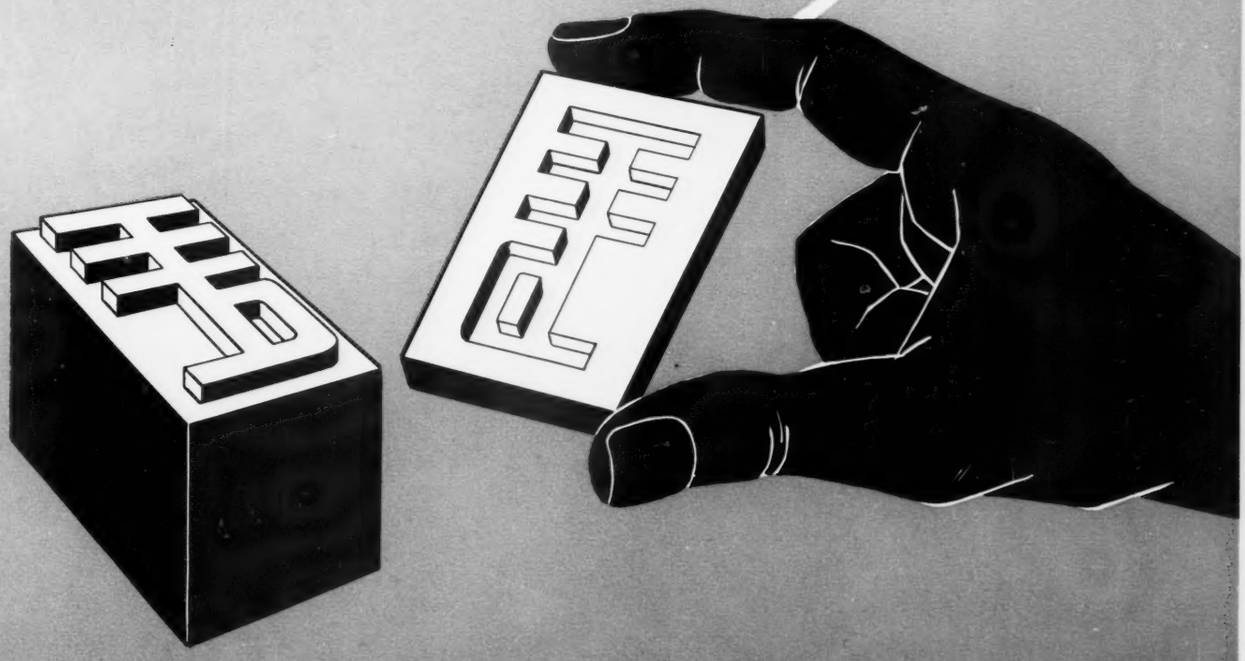
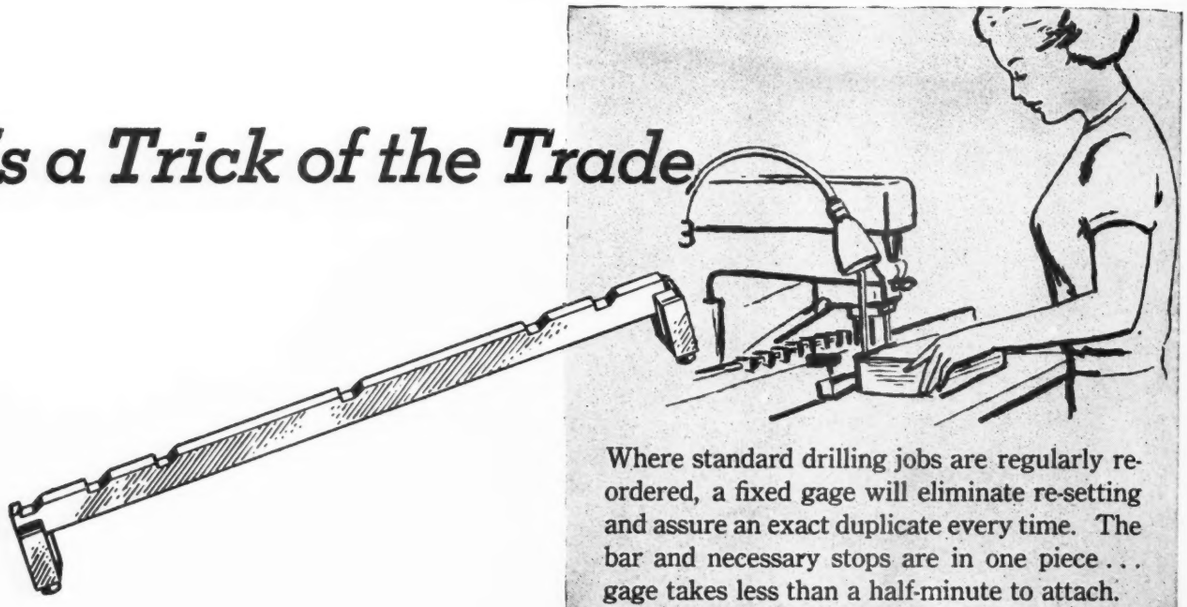
Plant Supt.	Mailing F'm'n
Platemaking F'm'n	Maintenance Supt.
Composing F'm'n	Purchasing Agt.
For filing, please return to	

PRINTING EQUIPMENT *Engineer*



AN INDUSTRY-WIDE TECHNICAL PUBLICATION

It's a Trick of the Trade

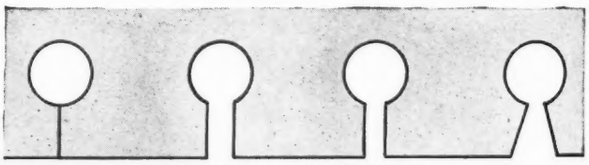


Where standard drilling jobs are regularly re-ordered, a fixed gage will eliminate re-setting and assure an exact duplicate every time. The bar and necessary stops are in one piece . . . gage takes less than a half-minute to attach.

but it's no trick to do all this with a...

Challenge Drill

Style E Challenge Paper Drill



Magic? No . . . just another instance where proper equipment pays off! That's right. You needn't be a magician to get the advantages Challenge drills *give* you.

- Power to drill through 2 inch lift of stock
- Two columns on head to prevent side play
- Positive action foot pedal
- Non-slip, automatic trip gage
- Natural handling operation, no back tracking
- One setting only of back gage and guides for drilling and slotting.

There are nine Challenge models — all available with slotting and cornering attachments. Operated by hydraulic, foot or hand power. Get details and prices now! 687

Challenge
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THE CHALLENGE MACHINERY CO.

Office, Factories and Show Room: Grand Haven, Mich. ■ Over 50 Years in Service of the Graphic Arts

DEALERS IN ALL PRINCIPAL CITIES

FOR THOSE WHO TAKE PRIDE IN FINE PRINTING

Premier Rotary Shaver

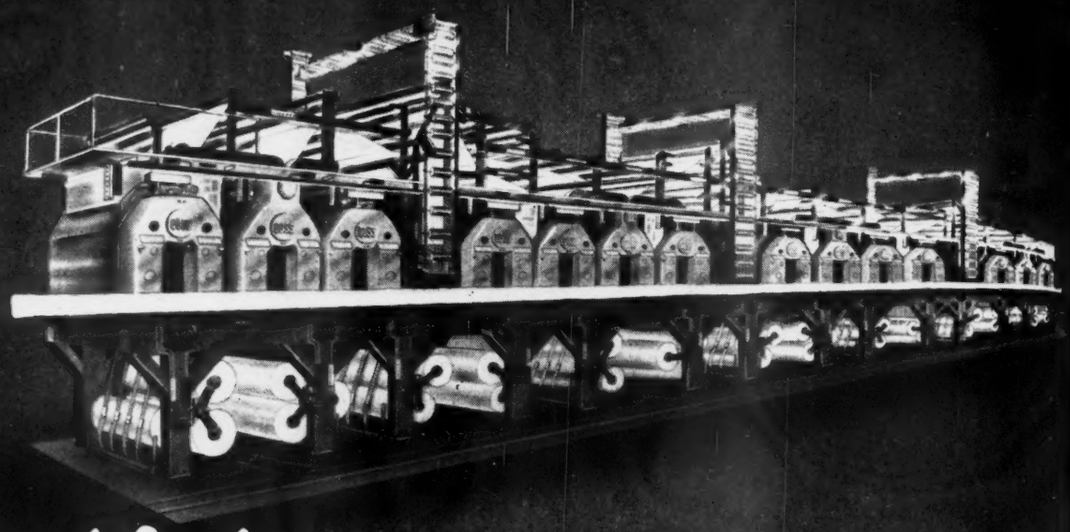
- It takes the best in machinery and the best of skilled craftsmen to produce consistently fine printing. That's why, in the plants of progressive newspapers and commercial graphic arts plants the world over, you'll find the STA-HI Premier Rotary Shaver is the preferred equipment for handling all types of flat shaving work — and doing it speedily, effortlessly, economically.

- The Premier is a superbly engineered machine, ruggedly built to "take it" for years and years of precision, trouble-free performance. It shaves stereotypes, electrotypes, zincs, wood or metal base with micrometer accuracy, to split-hair tolerances. And the resulting printed product it helps make possible is one of which you can be mighty proud!

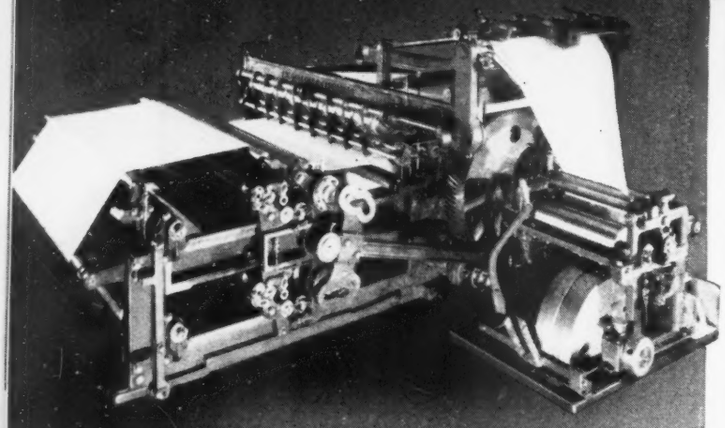
Sta-Hi Corporation

"SUPERIOR NEWSPAPER PRODUCTION MACHINERY"

235 W. WASHINGTON BOULEVARD ● BOX 152, WHITTIER, CALIFORNIA



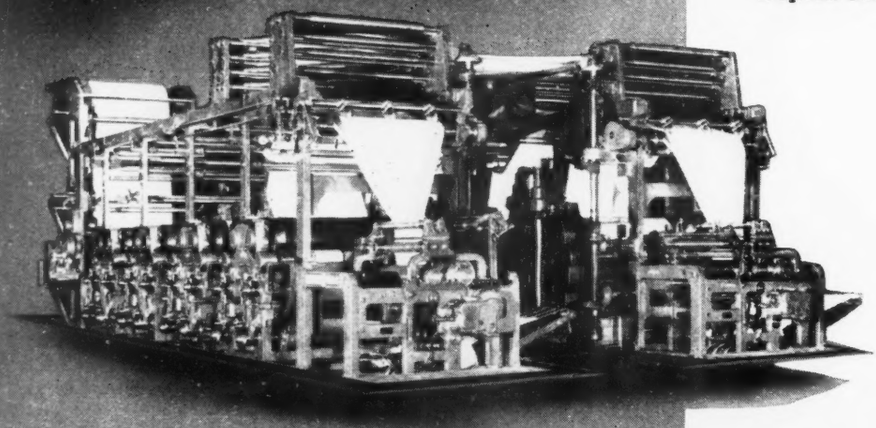
If you publish a newspaper . . .



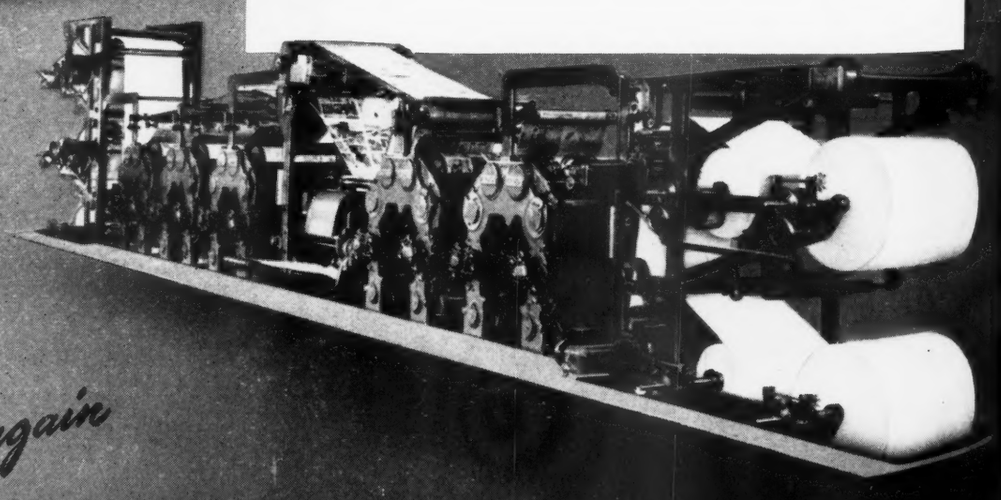
there's a GOSS PRESS for you!

Whether you print over a million a day or just a few thousand a week, you can do it better on a Goss press. For the large metropolitan daily, there's the *Headliner* . . . for intermediate circulation, the *Universal.* If your paper is in the medium-size group, you can have the economies of tubular press operation with a *Goss-Duplex Unitubular, Unitube,* or *Dek-A-Tube.* And for the small daily, semi-weekly, or weekly . . . there are the reliable flat-beds—*Duplex Model E* and *Cox-O-Type.*

It's the most complete line of newspaper presses ever built—every one the product of almost three-quarters century experience in designing and building presses of all types and sizes, including multi-color, rotogravure, and magazine. Write for specific information on the Goss press that best fits your requirements.



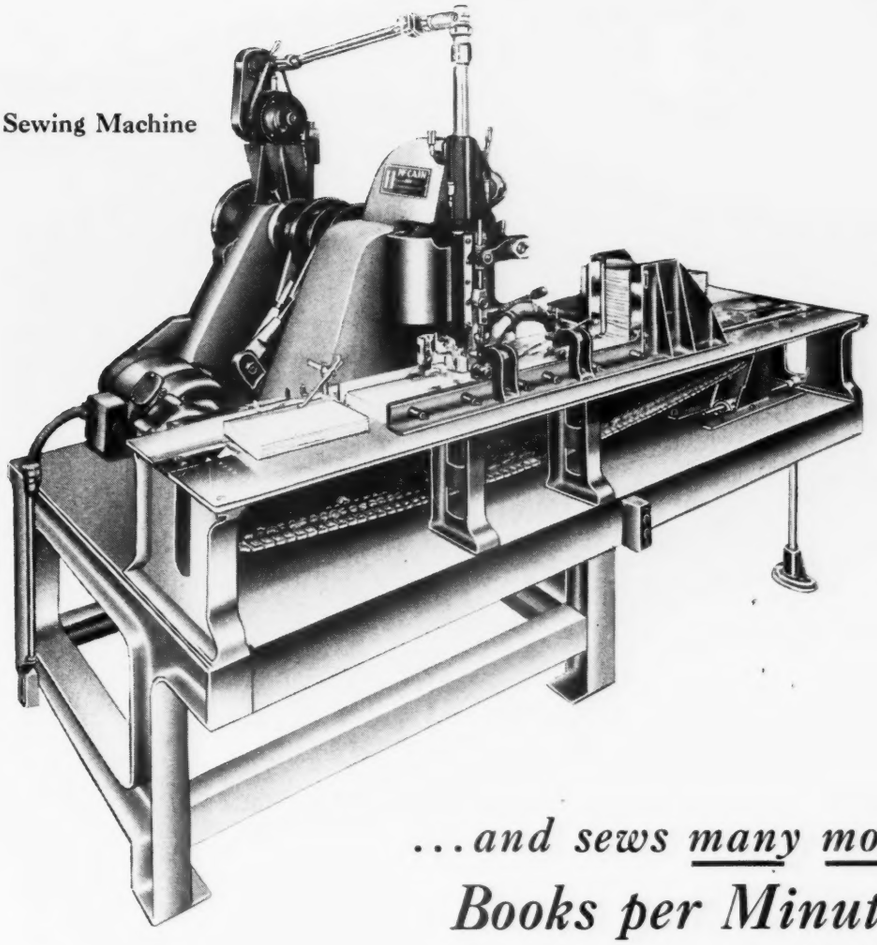
THE GOSS PRINTING PRESS CO.
1535 S. Paulina St., Chicago 8, Ill.
Duplex Division: Battle Creek, Mich.
Goss Printing Press Co. Ltd., Preston, England



it's **GOSS** *again*

QUADRUPLES the Strength
of your Sewed Books

The McCain Side Sewing Machine



...and sews many more
Books per Minute!

This machine will not only increase your *production,* but will give you sewed books four to five times stronger than the product of conventional sewing methods.

Operating at its normal speed of 250 one inch stitches per minute, it sews books from 3/16" to 2" in thickness, 5¼ to 15" backbone length; minimum page width 4", maximum 11".

Books over ¾" in thickness are drilled half their thickness from above, half from below. Drill chips are exhausted by vacuum system. Thread is lubricated with liquid soap. Single thread is used, so bobbin doesn't have to be replenished.

Bottom row of stitching is *glued,* giving still further strength. End sheets and reinforcing strips are sewed right in. Separate color and halftone pages are jogged and sewed into the complete unit, with resulting economy. The machine is easily adjusted, cleaned and lubricated.

If you would like to boost your bookbinding production and deliver much stronger sewed books, ask us to tell you more about the McCain Side Sewing Machine.

McCain • Dexter • Christensen

Modern Machines for Printers and Binders

Dexter Folder Company, General Sales Offices, 330 West 42nd Street, New York 18, N. Y.

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than our years of successful
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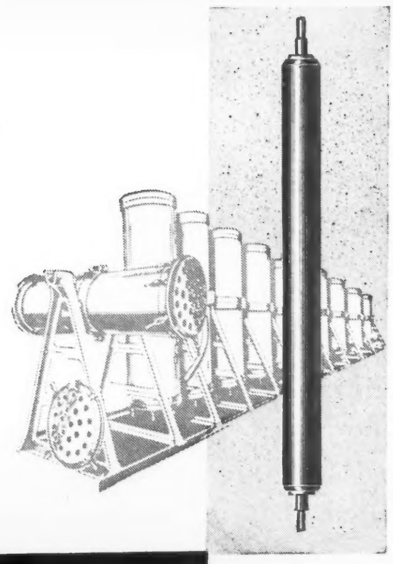
printing industry . . .



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MANUFACTURERS OF
PRINTERS' ROLLERS
LITHO-OFFSET ROLLERS

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Printing Rollers

19 modern factories are
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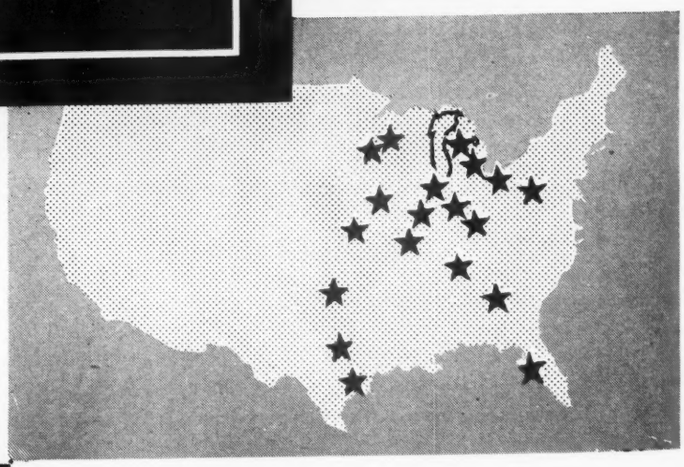
service whenever you need it.



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COMPOSITION ROLLERS FOR
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SHIP YOUR OLD ROLLERS TO THE
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MAKERS OF RUBBER • NON-MELTABLE • FABRIC-COVERED • ROTOGRAVURE • OFFSET • COMPOSITION • VARNISH-LACQUER • GRAINING ROLLERS

PRINTING EQUIPMENT *Engineer*

AN INDUSTRY-WIDE TECHNICAL PUBLICATION

Published especially for management, production and mechanical executives responsible for printing production and the specification of equipment and supplies used in the commercial, magazine, private plant and daily newspaper fields.

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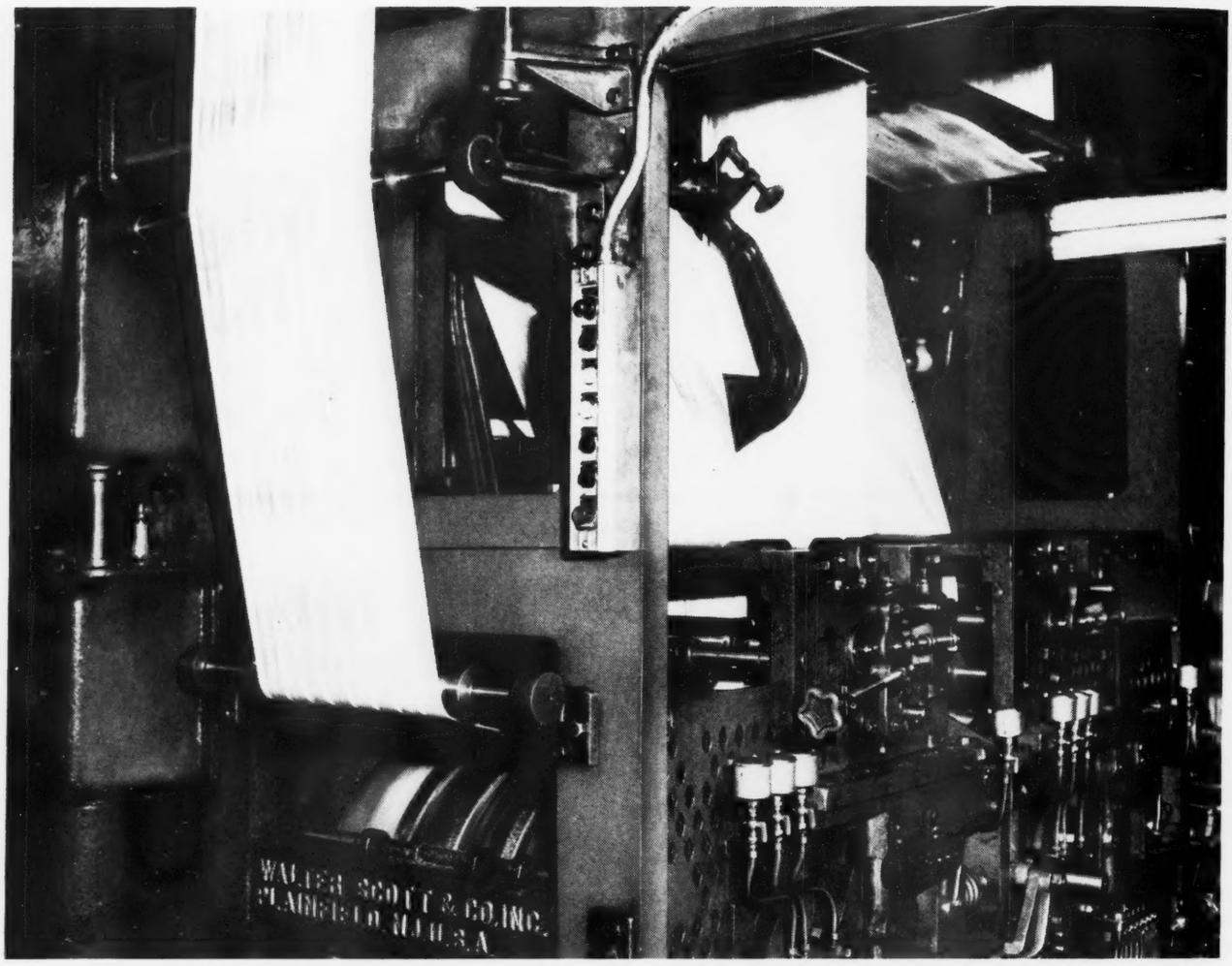


Action Photo

No Reader Likes a Poorly Folded Newspaper!

SCOTT "Extra Hi-speed" Folders assure neatly folded newspapers. The only folder built with a 3 to 2 ratio, i.e., a three-surface folding cylinder with patented expansion bands and co-acting two-surface cutting cylinders. "Straight" or "collect", book form or sectional, makes possible the successful handling of all newspapers from a 4-page tabloid to a 96-page full size newspaper. No other folder has this wide range capacity.

SCOTT Folders start with the units without lost motion to break webs. The number of pages being printed does not restrict the speed of the folders. When you use a SCOTT 3 to 2 ratio folder, the inside section of a collated newspaper does not protrude beyond the outside section. All other folders are 2 to 1 ratio and cut the outside section shorter, causing poorly folded newspapers.

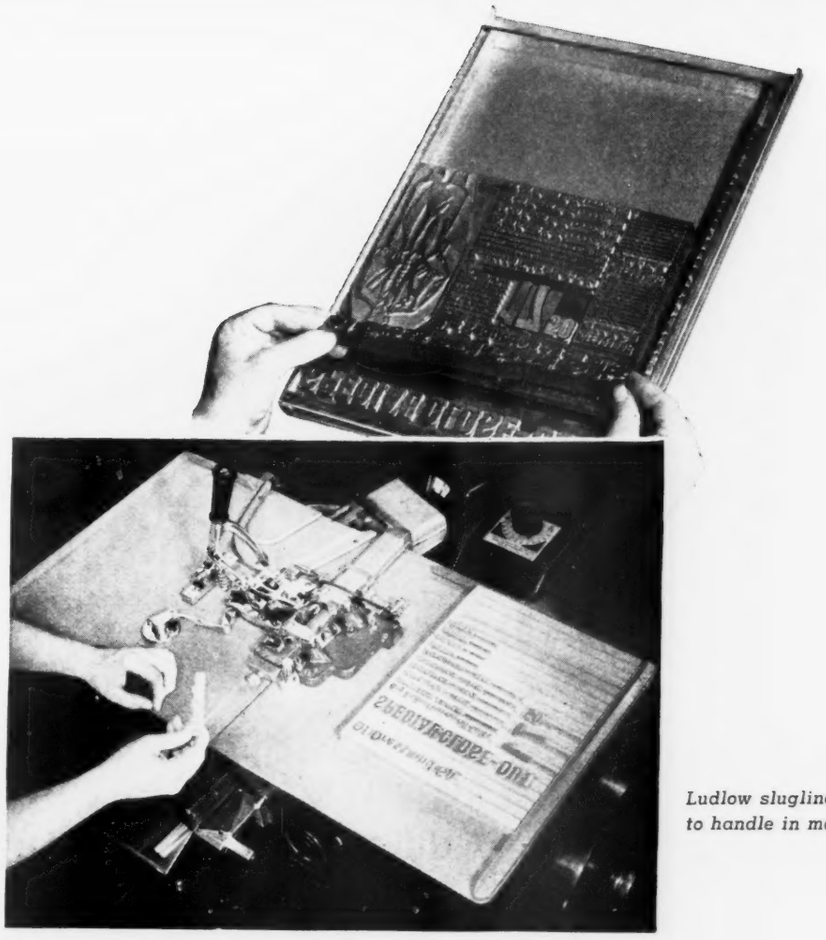
The features of SCOTT Folders assure the publishers, equipped with SCOTT Presses, the greatest performance in delivering a well printed and neatly folded newspaper.

Modernizing . . . Expanding . . . Planning a new plant . . . Consult SCOTT on the fastest, most versatile newspaper press equipment ever developed. We invite your inquiries.

Buy with Confidence . . . Buy SCOTT

15-1-14

WALTER SCOTT & CO. INC.
PLAINFIELD, NEW JERSEY



Ludlow sluglines are easy to handle in make-up

Ludlow Make-up

Is Efficient and Easy with Sluglines

Ludlow all-slug composition expedites make-up operations, in that the solid sluglines are readily assembled in the form. The uniform thickness of the Ludlow slug, whether on a 6-point or a 12-point body, also greatly facilitates the handling of display or miscellaneous composition. Furthermore, with a Ludlow-set form the printer is sure of a solid, square lockup that minimizes pressroom troubles. Ease of make-up is only one of many advantages of Ludlow composition.

Ludlow Typograph Company · **2032 Clybourn Avenue, Chicago 14, Illinois**

Set in members of the Ludlow Karnak family

ST. LOUIS POST-DISPATCH
Meets Increased Production Requirements

By Adding More WOOD PRESSROOM EQUIPMENT

THREE ADDITIONAL STANDARD BLACK PRESS UNITS WITH STANDARD REELS, AUTOMATIC AUTOPASTERS AND PNEUMATIC TENSIONS

NOW IN OPERATION...

To keep pace with steadily increasing production demands, the Post-Dispatch has installed three additional WOOD press units and now operates 24 black units with auxiliary equipment, supplemented by six 4-color units. Complete flexibility for use of black and ROP color is a daily feature.

Day-in, day-out, these dependable WOOD units operate at sustained high speeds. Papers come off the presses, FAST . . . ready for sale while news is still "Hot Off The Press."

A continuous performance is assured throughout paper runs with WOOD standard Reels, automatic Autopasters and Tensions which feed and replenish webs while the presses operate at top speed.

Any publisher, whose pressroom needs proper production facilities, should inspect the Post-Dispatch installation. Remember, NOTHING EQUALS WOOD PRESSROOM EQUIPMENT for economical, high-speed production. Send for information.

IF IT'S Wood IT'S GOOD

WOOD NEWSPAPER MACHINERY CORPORATION
PLAINFIELD, NEW JERSEY • SALES OFFICE: 501 FIFTH AVENUE, NEW YORK 17

3 Good Questions...

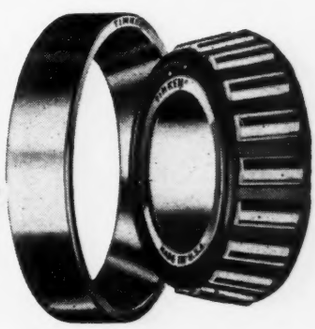
Why do TIMKEN® bearings take heavier loads and have longer life?

Why do TIMKEN bearings resist wear and retain precision longer?

Why are TIMKEN bearings more uniform in their high quality?

One Good Answer—

THE TIMKEN COMPANY MAKES ITS OWN STEEL!



THERE are several good answers to the questions above. But one of the *basic* reasons for the superior load capacity, wear resistance, and uniform high quality of Timken® bearings is the fact that the Timken Company makes its own steel. And the Timken Company is the only bearing manufacturer in America that does!

Having its own steel-making facilities enables the Timken Company to carry on research and development in steels that results in constant improvement in quality. It also permits complete control of the product—from melting through final inspection.

The high quality of Timken steel begins in the melting of selected scrap. Correct chemical composition of every heat is insured by use of the direct-reading spectrometer, new scientific instrument for analyzing a heat of steel in a matter of seconds. Even after the steel is in billet form, quality safeguards continue. The billets are scarfed and chipped to prevent cracks and flaws in the internal structure of the finished product.

Along with advanced design, precision manufacture, and rigid quality control, Timken steel is one of the big reasons why it pays to always look for the trade-mark "Timken" on the tapered roller bearings you buy. The Timken Roller Bearing Company, Canton 6, Ohio. Canadian plant: St. Thomas, Ont. Cable address: "TIMROSCO".

TIMKEN TAPERED ROLLER BEARINGS

TRADE-MARK REG. U. S. PAT. OFF.

NOT JUST A BALL ○ NOT JUST A ROLLER ▭ THE TIMKEN TAPERED ROLLER ▭ BEARING TAKES RADIAL ↓ AND THRUST →○← LOADS OR ANY COMBINATION →✳←

1 LESS LABOR

This Elwell-Parker roll clamp truck outperforms a whole crew of manual workers . . . It permits close, orderly stacking, impossible with many similar devices. Clamp pressure can be regulated for different papers. No pallets needed; no damage to stock. Stacks horizontally or vertically.

2 TIME SAVED

Production is faster because trucks move loads to and from presses and bindery without delay. The flow of materials to and from equipment is synchronized to match their output.

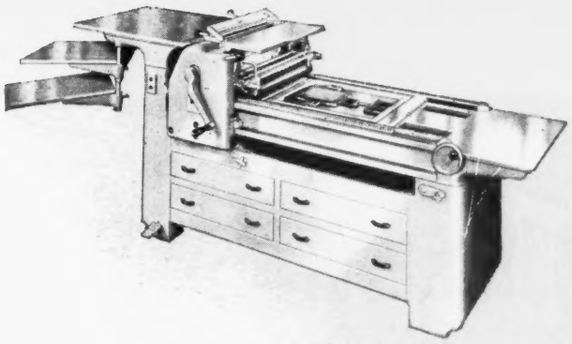
Triple benefits gained by ELWELL-PARKER PAPER HANDLING

From the wealth of its 45 years' experience, Elwell-Parker has originated many unique truck attachments for handling paper stock—and also has devised operating practices to insure greatest benefit from their use by the printer . . . In transporting loads to and from storage, press room and bindery, Elwell-Parker can help you save labor, production time and waste of space. Without obligation, an experienced EP man will recommend a specially "tailored" materials handling system for your particular plant. The Elwell-Parker Electric Company, 4196 St. Clair Avenue, Cleveland 3, Ohio.

3 SPACE GAINED—WEIGHT SAVED "Roof-high" stacking at "floor-level" costs is being achieved by this E-P truck as it tiers flat stock in mill warehouse. This special fork truck weighs two tons less than a standard fork truck of the same capacity.

SCIENTIFIC PAPER HANDLING
is fully explained in this free booklet. 44 pages; 125 photos. Ask for "Industrial Logistics in Paper."

ELWELL-PARKER
POWER INDUSTRIAL TRUCKS
Established 1893



Vandercook 219ABT Proof Press

Has adjustable bed and power inking for pulling acetate or glassine transparencies as well as black on white reproduction proofs.

Vandercook 68 Makeup Gauge

A new, precision device for making up type forms more quickly and accurately. Maximum form capacity 60x 80 picas.

Vandercook 215 Proof Press

Especially designed for photoengravers to handle small plates in black and white, and color. Power inking. Maximum plate or form 14" x 18".

Save Press Time and Labor Time! Save on Over-all Costs . . . with Vandercook Pre-Press

How else can you increase production and reduce your costs except by adopting more efficient methods? Surely you can't make savings on materials or wages. Nor can you probably make any substantial cuts in your plant overhead.

For this reason, we believe that Vandercook Pre-Press can help you speed up production in all departments . . . give you more printed sheets from your presses . . . and enable you to improve your quality. Why not ask us for further information?

VANDERCOOK PRE-PRESS ...CUTS COSTS!

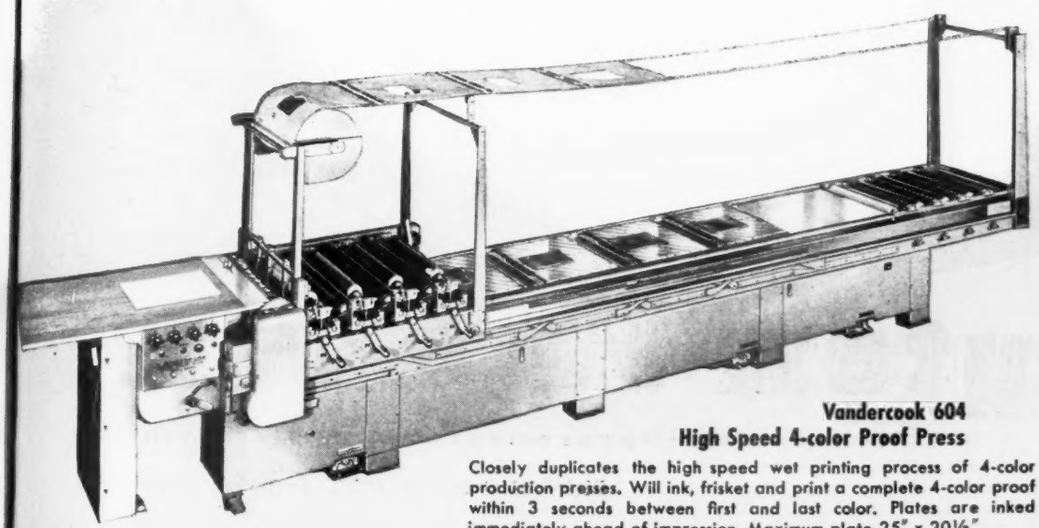
VANDERCOOK & SONS, INC.

900 North Kilpatrick Ave., Chicago 51, Illinois

Largest Producer of Proof Presses and other Pre-Press Equipment for Letterpress, Offset and Gravure

Vandercook 9 Plate Gauge

For checking the thickness of flat or curved plates up to 18" wide under printing pressure.



Vandercook 604 High Speed 4-color Proof Press

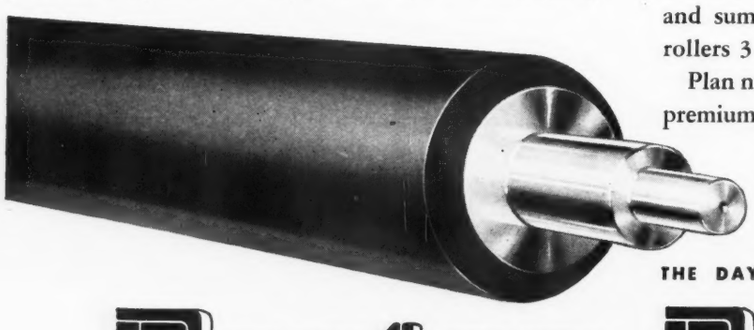
Closely duplicates the high speed wet printing process of 4-color production presses. Will ink, frisket and print a complete 4-color proof within 3 seconds between first and last color. Plates are inked immediately ahead of impression. Maximum plate 25" x 20½".

Vandercook 11 Block Leveller

For accurately planing wood, lead alloy, aluminum, magnesium and plastic plate mounting material. Capacity 12" x 18".

Now Dayco Newspaper Rollers give you deep, true, live colors, fast as the news, on your high-speed presses.

Daycos can be used for color or black and white, in any position. They handle all types of ink; are unaffected by fast-drying "special" inks, washup solutions, oils, acids, moisture. Their diameter, shape and softness are unaffected by press speeds or climatic conditions—remain accurate to 1/1000 of an inch. Use the same rollers winter and summer, without change. Daycos outlast ordinary rollers 3 or 4 times.



Plan now to increase advertising revenue, earn the color premium, with the quality reproduction that Daycos will give you in all press positions! For more news of the new Daycos and what they can do for you, write:

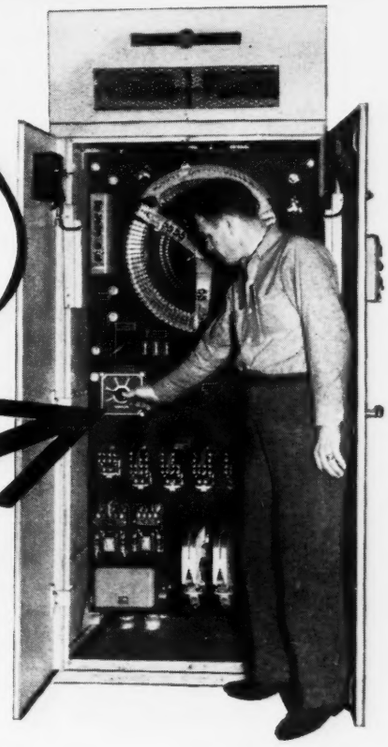
THE DAYTON RUBBER COMPANY, DAYTON 1, OHIO

Dayton Rubber

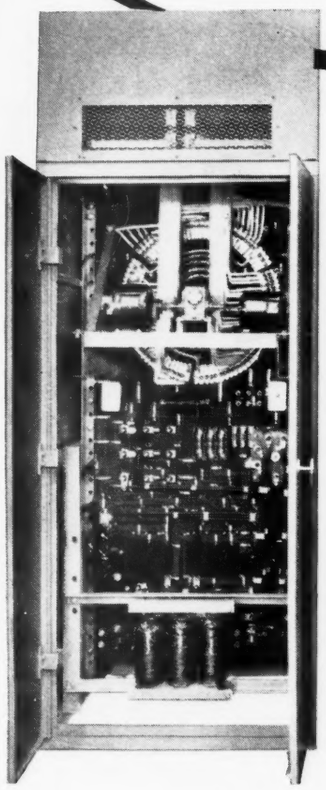
Pioneers of Improvements for Better Printing

NOW! COMPLETE PRESS SPEED CONTROL OVER ENTIRE RANGE REGARDLESS OF LOAD

New G-E Full-Automatic Press Drive Controller gives you greater flexibility of operation from a packaged unit. Operator at Waco News Tribune, Waco, Texas, is shown setting new 6-position load adjusting switch on built-in autotransformer.



Designed for presses using 40- to 75-hp drives, this new controller also can be set up with two equipments in parallel for 75- to 150-hp requirements. Push button station in upper left allows testing out the system without running press. Circuits are provided for red and green warning lights which operate from safe-run buttons.



Rear view of the new controller shows compact factory-wired assembly which packages all necessary operating and protective relays, contactors, switches, and terminals for operating main motor, brake, and starting motor.

Single Unit Operation Selector switch provides full speed range for all desired press combinations . . . from one unit to all units and folder.

Simplified Installation Packaged unit design saves expense, time, and space on installation. Primary and secondary are now enclosed in one cubicle in sizes through 75 hp. The equipment is as compact as good engineering will allow and needs only a few connections to install.

Smooth Performance Regular speed steps provide smooth and rapid acceleration and deceleration without danger to the web. Speeds are held essentially constant at all other times.

Easy, Economical Maintenance Natural draft ventilation of secondary resistors mounted in top of cubicle keeps resistors cool and eliminates the need for force ventilating equipment. Automatic protective devices eliminate all but routine maintenance.

INVESTIGATE TODAY! The a-c full-automatic press drive controller is the result of careful designing and testing by General Electric printing specialists. A G-E sales engineer located in an office near your plant will be glad to give you more information and discuss your requirements with you. Get in touch with him now! . . . or write for Bulletin GEA-5614. *General Electric Co., Schenectady 5, N.Y.*

GENERAL ELECTRIC

653-12

3 WAYS BETTER . . .

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Fully Automatic High Intensity

ARC LAMPS

CONTROL that improves quality

INTENSITY that speeds production

EFFICIENCY that saves money

That's why leading shops everywhere install them. Listed are but a few of the hundreds of users.

Models for all photo-mechanical reproduction processes. Adapters to fit most cameras and photo-composing machines.

We'll be glad to send you full details and prices. Simply use coupon.

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ARKANSAS
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Little Rock—Peerless Engraving Co.

CALIFORNIA
Oakland—Oakland National Engraving Co.
Los Angeles—Western Lithograph Co.
San Bruno—H. S. Crocker Co.
San Francisco—Stecker-Traung Litho Corp.
San Jose—Rosicrucian Press

COLORADO
Colorado Springs—Pikes Peak Litho
Denver—Post Printing & Publishing Co.

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Norwich—Chambers-Storck Co.
Springdale—Time, Inc.
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GEORGIA
Atlanta—Photo Process Engraving Co.
Columbus—Commercial Printers Inc.

IDAHO
Boise—C. W. Joslyn

ILLINOIS
Chicago—Chicago Tribune
Collins, Miller & Hutchins
R. R. Donnelley & Son
Champaign—G. R. Grubb & Co.
Mount Morris—Kable Bros. Co.
Oak Park—Lacy Bros. Engraving Co.
Rockford—J. L. Clark Mfg. Co.
Springfield—Illinois State Journal & Register

INDIANA
Evansville—Keller-Crescent Co.
Indianapolis—Progressive Offset Co.
Terre Haute—Thompson-Symon Co.

IOWA
Des Moines—Meredith Engineering Co.

KANSAS
Hutchinson—Hutchinson News Herald
Kansas City—Graphic Arts Engraving Co.
Topeka—Myers Company

KENTUCKY
Louisville—Courier Journal

LOUISIANA
Baton Rouge—Esso Standard Oil Co.
New Orleans—H. L. Peace Engraving Co.

MARYLAND
Baltimore—Lord Baltimore Press
Beltsville—Soil Survey, Dept. of Agriculture
Silver Springs—Haynes Litho. Corp.

MASSACHUSETTS
Boston—Buck Printing Co.
Framingham—Dennison Mfg. Co.
Springfield—General Offset Printing Co.

MICHIGAN
Ann Arbor—Edwards Bros.
Dearborn—Ford Motor Co.
Detroit—Federal Litho. Co.

MINNESOTA
Albert Lea—Church Litho. Co., Inc.
Minneapolis—Mono-Lith Co.
St. Paul—Brown & Bigelow

MISSISSIPPI
Jackson—Mississippi Engraving Co.

MISSOURI
Ferguson—Universal Match Co.
Kansas City—Kansas City Star
St. Louis—Color Ad Engraving Co.

MONTANA
Butte—Ashton Engraving Co.

NEBRASKA
Lincoln—University of Nebraska
Omaha—Epsen Litho. Co.

NEW HAMPSHIRE
Dover—Kidder Press Co.

NEW JERSEY
Bridgeton—Price Bros., Inc.
Clifton—Post P. E. Co.
Jersey City—Jersey City Printing Co.
North Bergen—Multitone Engraving Co.
Paterson—Continental Can Co.

NEW YORK
Binghamton—Frank A. West Co.
Brooklyn—Consolidated Litho. Co.
Buffalo—Wm. J. Keller, Inc.
Endicott—International Business Machines
Great Neck—Sperry Gyroscope Co.
Lake Success—United Nations
Long Island City—Dennison & Sons
New York—Conde Nast Engravers
Time, Inc.
Niagara Falls—Moore Business Forms
Pelham—Sanborn Map Co.
Pleasantville—Reader's Digest
Rochester—Stecher-Traung Litho. Co.

NORTH CAROLINA
Charlotte—Charlotte Engraving Co.

NORTH DAKOTA
Fargo—Dakota Photo Engr. Co.

OHIO
Akron—Akron Beacon Journal
Ashland—A. L. Garber Co.
Athens—McBee Company
Cincinnati—Stevenson Photo Color Sep. Co.
Cleveland—Copyfyer Litho. Co.
Mansfield—Mansfield Photo Engraving Co.
Middletown—American Rolling Mill Co.
Springfield—Crowell-Collier Publishing Co.
Toledo—Seidel-Farris Co.
Youngstown—Adcraft Engraving Co.

OKLAHOMA
Oklahoma City—Standard Engraving Co.
Tulsa—Southwestern Engraving Co.

PENNSYLVANIA
Altoona—Butterick Co.
Johnstown—Conemaugh Engraving Co.
Philadelphia—Hoover & Sons Lithographers
Pittsburgh—Robert Rawthorne Co.

TENNESSEE
Knoxville—Capper Engraving Co.

TEXAS
Austin—The Steck Co.
Dallas—Wilson Engraving Co.
Fort Worth—Stafford Photo Engraving Co.
Houston—Humble Oil & Refining Co.
San Antonio—Southwestern Engraving Co.

UTAH
Salt Lake City—Wheel Wright Litho. Co.

VIRGINIA
Arlington—Cooper & Trent Co.
Roanoke—Hammond's Printing & Litho. Works

WASHINGTON
Seattle—Craftsman Press
Tacoma—Liberal Engraving Co.
Yakima—Republic Publishing Co.

WISCONSIN
Appleton—Post Publishing Co.
LaCrosse—Northern Engraving & Mfg. Co.
Menasha—Northwestern Engraving Co.
Milwaukee—Gugler Litho. Co.
Sheboygan—Commercial Engraving Co.

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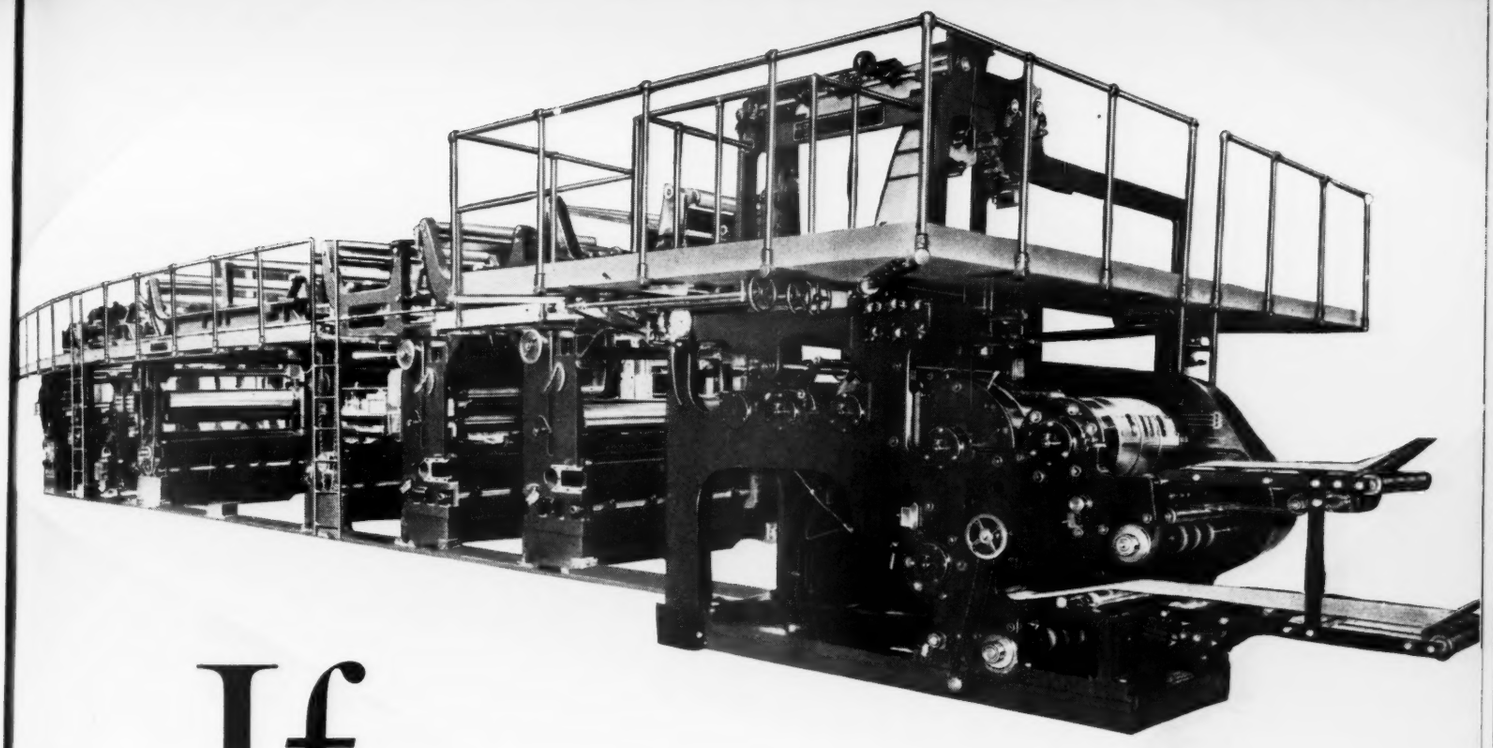
CITY & STATE _____



If *your press problem is different—*

let COTTRELL build just the press you need!

This special press was designed and built by Cottrell to meet one customer's problems. It is a five-unit rotogravure web press equipped with a flying paster and a combination magazine and newspaper supplement folder. It prints one- and four-color work; one color on one side, four colors on the other. Provisions are made for the addition of another paster and folder for two-web operation . . . printing monotone on one web and two- and one-color work on the other.

The new, specially built Cottrell press pictured here is probably the only one of its kind in the world!

This five-unit rotogravure web press with special equipment is typical of the ability and the willingness of the Cottrell organization to develop special printing equipment to meet unprecedented requirements.

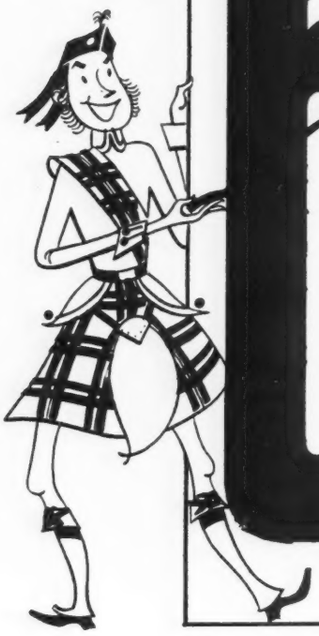
Cottrell's exceptional understanding of the many and complex problems of the printing industry makes possible a practical combination of various press features to meet specific requirements. No matter how unusual your problem may be, you can save time and money if you take it up with Cottrell first.

If you are not now using Cottrell multicolor presses, let us show you how the application of modern high-speed production methods, which these presses make possible, can help you meet rising costs and increase printing quality.

COTTRELL

C. B. COTTRELL & SONS COMPANY, Westerly, Rhode Island
Claybourn Division: Milwaukee, Wisconsin
Sales Offices: New York, Chicago, London

The 6 in ATF Little Giant 6



means

6 BIG

money-saving

features

It's the 12x18 automatic job cylinder press that handles 85% of all job shop work... and makes an ideal auxiliary press for large commercial printers.

Remember the number "6" after "Little Giant"... it stands for these 6 important features:

FASTER GET-AWAY due to such exclusives as positive lock-up of form on bed of press with one twist of quoin key.

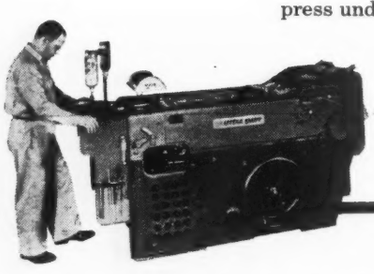
MORE IMPRESSIONS PER HOUR with speed range from 2500-5000 impressions and stepless variable speed control.

BETTER QUALITY from such exclusives as full form coverage with all three rollers (only press under 25x38 with this feature).

EASIER OPERATION resulting from convenient centralized controls, 3 lb. ink fountain, automatic press trip, etc.

WIDER RANGE—handles onion skin, envelopes, postcards or 4-ply at 3000-4000 impressions an hour... long or short runs.

BIGGER PRINTING PROFITS because no other press in its class gives all the above opportunities to make money.



Ask your ATF representative for more details about the profit opportunities in the ATF Little Giant 6. AMERICAN TYPE FOUNDERS, 200 Elmora Ave., Elizabeth B, New Jersey. Branches in principal cities.

ATF

Better, More Profitable Printing from the Widest Line of Processes

GRAVURE . . . LETTERPRESS . . . OFFSET

Type faces shown are: Alternate Gothic, Spartan and Century Schoolbook

Nobody Builds a Nest Like a Bird

The big results of specialization have always been more knowledge, better products, maximum economies.

We go to the builder for a house, to the gardener for landscaping, to the stonemason for a wall.

The dentist makes a fine upper plate, but there's no substitute for the skills of photo-engraving to turn out a plate that will print well!

The key word is *specialization*, well exemplified by Chemco's devotion to one subject: Designing, building and supplying the finest equipment and materials for plate makers.

WRITE ANY CHEMCO BRANCH FOR THE SPECIFIC INFORMATION YOU WANT, AND FOR THE SPECIALIZED HELP YOU NEED IN PLANNING.

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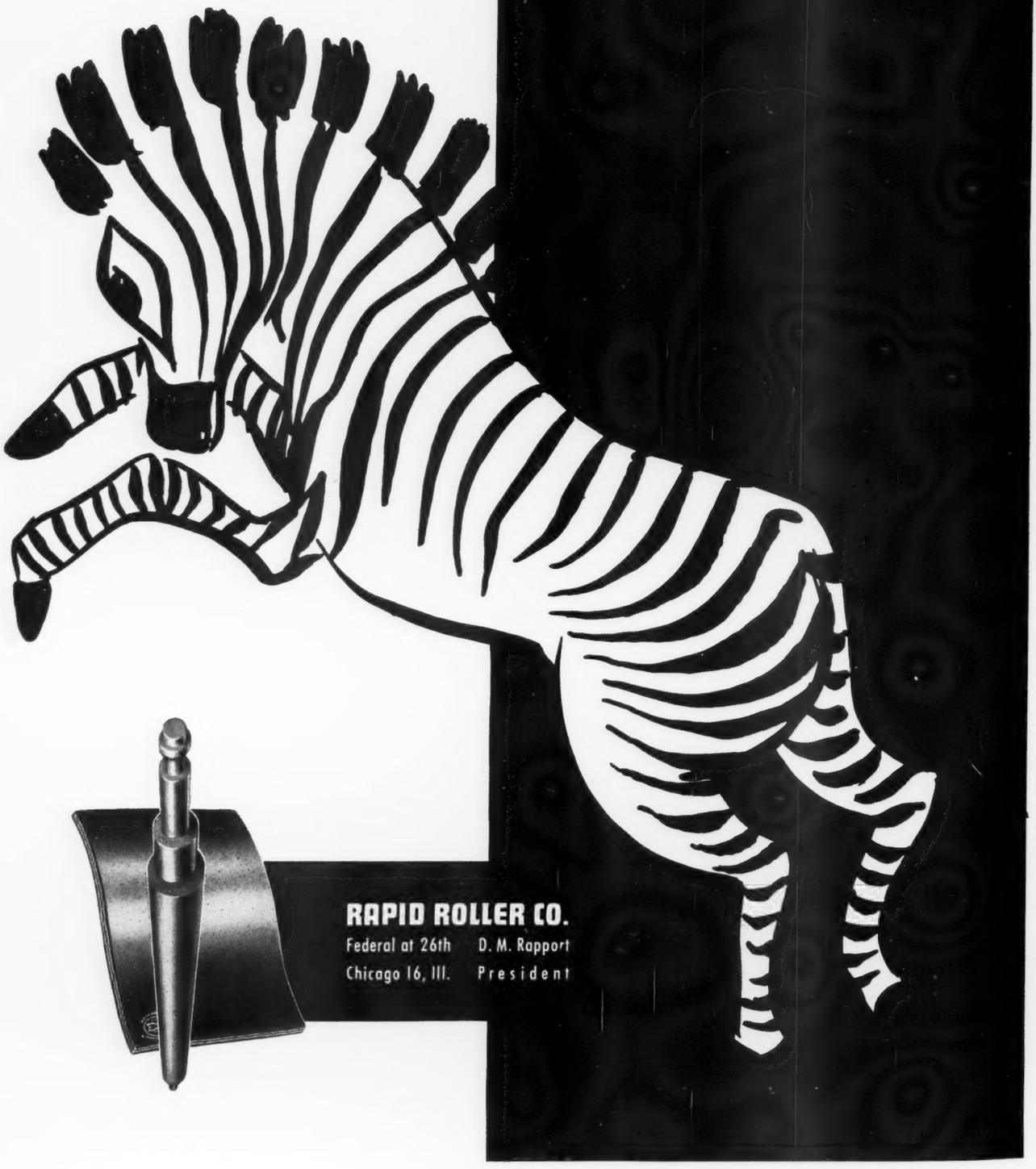

RAPID ROLLER CO.
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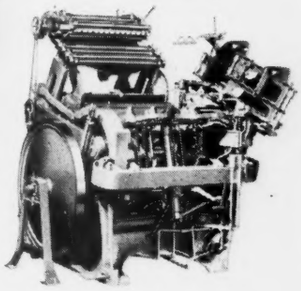
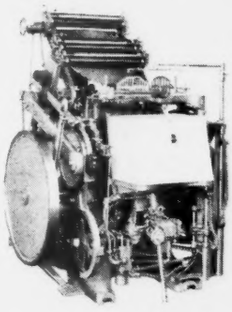
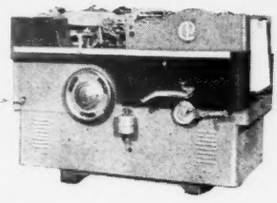
Chicago 16, Ill.

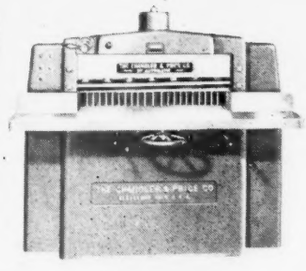
D. M. Rapport
President

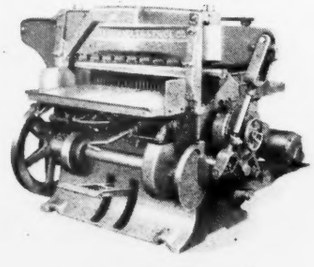
Protect Your Profits with Chandler & Price Equipment

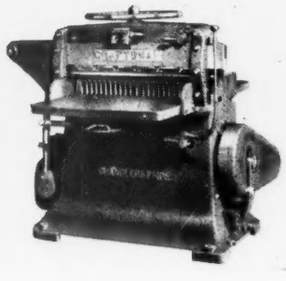




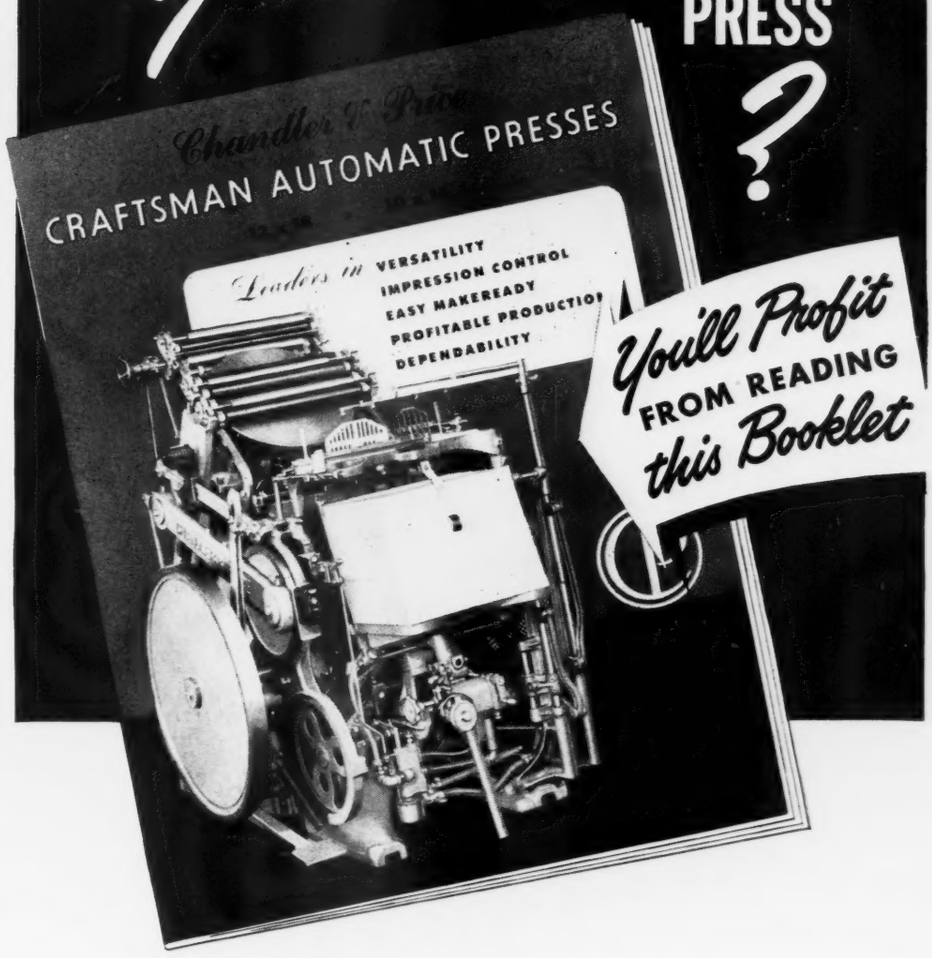








ARE *You* CONSIDERING A NEW PRESS ?



● Compare Chandler & Price Automatic Units 12 x 18 and 10 x 15 point by point with your requirements and you'll say as hundreds of printers have said "That's the press for me."

These fully automatic presses provide complete versatility in printing any sheet from onion skin to thick blotting and other bulky stocks. They also handle automatic feeding for certain types of cut-out novelties, cartons and similar work that otherwise would have to be hand fed at a much higher labor cost.

Sheet sizes from No. 88 card up to the press capacity—13″ x 19″ on the 12 x 18 and 11″ x 15½″ on the 10 x 15—can be fed automatically to close register. Owners of Chandler & Price Craftsman Automatic Units are able to handle profitably and quickly a very large part of the sizes and variety of work that comes into the average job printing plant.

Write for the Craftsman Automatic Press Booklet. Twenty minutes reading time will give you a valuable understanding of how C&P units can make money for you.

THE CHANDLER & PRICE COMPANY

6000 CARNEGIE AVE. • CLEVELAND 3, OHIO

Where American workmen have been building printing machinery for American printers for nearly three quarters of a century

LOOKING FOR MORE DEPENDABLE, ECONOMICAL AND PRODUCTIVE PRESS OPERATION?

Then weigh carefully these 7 features of C-H Press Drives and Controls

To the universally acknowledged and fundamental superiority of the alternating current motor in the field of newspaper and magazine press drives, Cutler-Hammer has added a new flexibility of acceleration and speed control, new economies, new space saving, new accessibility, a new simplicity of design and operation that stamp the Cutler-Hammer Press Drive as the most advantageous in the market today. Seven features that mean better press performance are set forth below.

1 **The Cutler-Hammer Press Drive and Control cost less initially, cost less to install, cost less to maintain.**

This simple drive consisting of a small constant speed motor and a single adjustable speed driving motor *must* cost less than a drive using multiple motors. The Cutler-Hammer Control for this drive, requiring no rectifier equipment, the equivalent of an ac-dc converter, with the complex associated equipment conversion apparatus must have, also costs less.

Installation cost of the ac 2 motor drive is from 30 to 40% less than for other drives. The control for the Cutler-Hammer Drive is in the form of a factory mounted and wired cubicle which can be installed in your plant easily and rapidly.

The alternating current motor is the most rugged of all and has only collector rings as sliding contacts. The Cutler-Hammer Control is made up of rugged magnetic components standard throughout industry, and lacks those fragile parts that cause so much trouble elsewhere. An industrial duty magnetic clutch is used in place of the ratchet type overriding clutch, eliminating the side strains and unequal bearing and gear teeth wear associated with the latter type. The magnetic clutch eliminates the use of a brake on the large motor which on the old style drive was released and set on each inching operation. On the C-H Drive, the magnetic clutch serves as the large motor brake, giving smooth, rapid, positive braking action. These features insure long, dependable service with reduced maintenance.

2 **The Cutler-Hammer Press Drive simplifies the task of putting an edition on the press.**

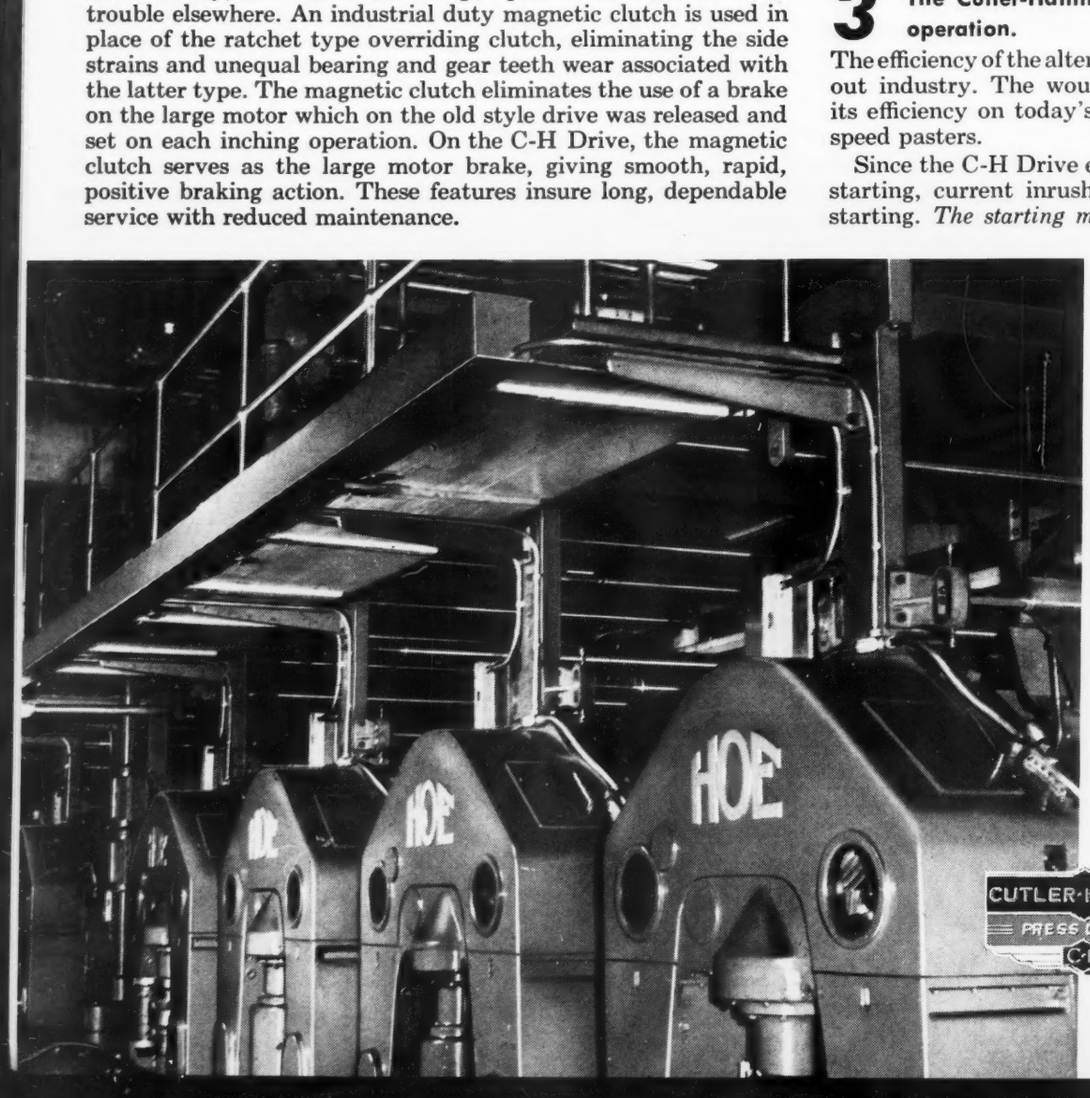
The use of a magnetic clutch provides a smooth cushioned start with gradual acceleration to threading speed. The pressman has better control of plate cylinder position and fewer jogging operations are required in replating a press. All steps of acceleration are smooth, there are no damaging shocks or jerking of the fragile web.

The new Cutler-Hammer Controller has 90 definite speed points with consequent smaller increments between points. Acceleration to any desired speed or to full printing speed is exceedingly smooth, is entirely automatic, and full speed acceleration is accomplished in 40 seconds. Acceleration curve is virtually a straight line.

3 **The Cutler-Hammer Drive provides highest efficiency of operation.**

The efficiency of the alternating current motor is conceded throughout industry. The wound rotor motor especially demonstrates its efficiency on today's high speed presses operating with high speed pasters.

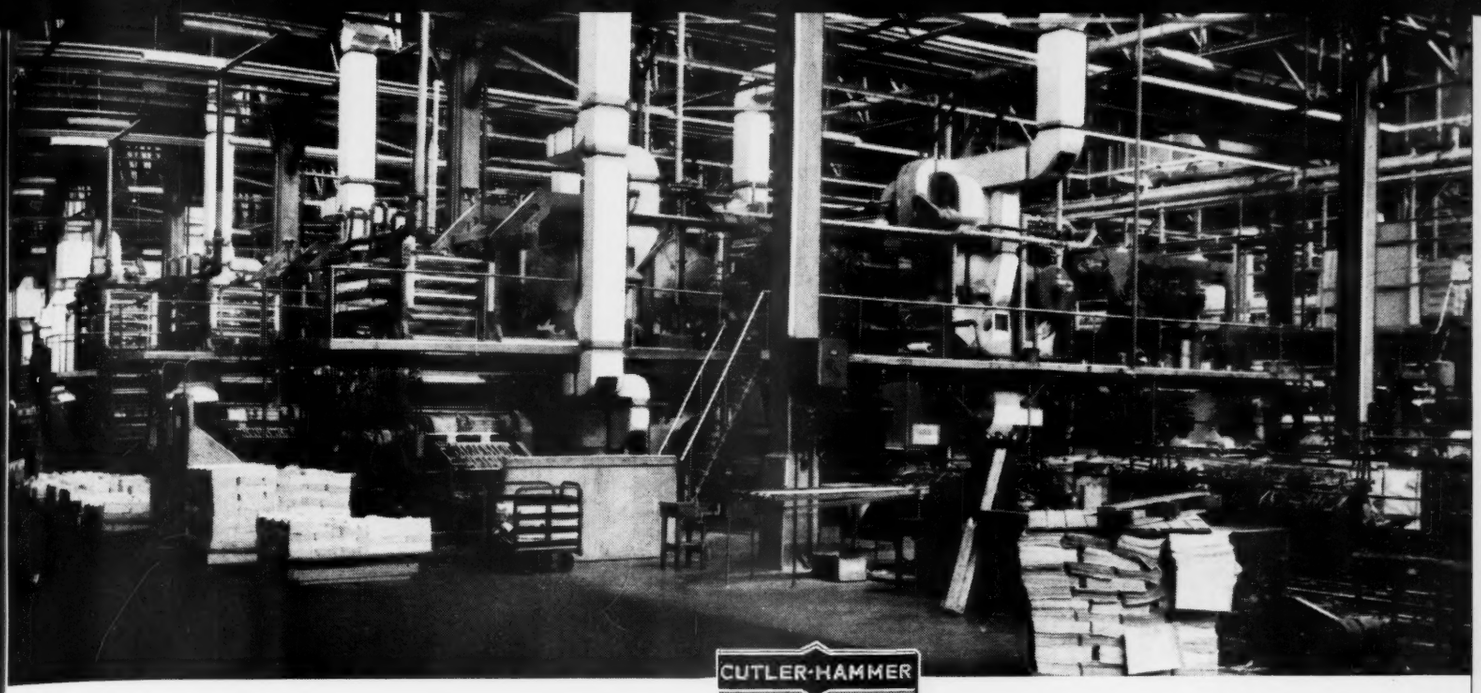
Since the C-H Drive employs a small constant speed motor for starting, current inrushes are far below those for main motor starting. *The starting motor also turns the driving motor through*



Cutler-Hammer Press Drives and Control at

MEMPHIS PRESS-SCIMITAR AND THE COMMERCIAL APPEAL

The Memphis Publishing Co. has just installed 12 new Hoe press units and three folding machines. These will be used in addition to 16 units and 4 folding machines to publish the morning and Sunday Commercial Appeal and the evening Memphis Press-Scimitar. Cutler-Hammer Press Drives and Control are used.



the magnetic clutch until the main motor contactor is closed. (The magnetic clutch drops out when the main motor contactor closes).

The use of the magnetic clutch permits the use of a smaller high speed driving motor.

4 The Cutler-Hammer Drive Controller provides complete flexibility.

As mentioned before, the new Cutler-Hammer Controller provides 90 different speed points. This feature is achieved by a unique scheme of resistor design. It provides not only added smoothness of acceleration, but controlled acceleration to desired printing speed, subsequent minute changes in speed, and smooth deceleration. It is also possible to proceed to a stable speed intermediate between threading and actual printing speed.

A further provision of 18 interlock circuits affords tremendous flexibility as in the case of accessory press equipment, dryers, valves, etc.

5 Both Drive and Control are economical of space.

The small number of elements in the Cutler-Hammer Drive take up less space. All elements are mounted in line, forming a long, narrow compact "package" alongside the press. Where access to paper reels is a factor, the Cutler-Hammer Drive can be suspension-mounted overhead, out of the way of reel trucks.

The control cubicles themselves are compact and can be installed out of the way in small rooms elsewhere. Their space economy is especially notable in comparison with equipment using rectifier apparatus.

6 The simple, standard control components pose no problem to your plant electrical men.

Although the Cutler-Hammer Control system offers a wide range of advantages, the components used in this control are simple, standard, known throughout industry. There are no puzzlers here to baffle your own electrical men and to require factory-expert servicing and attention. There are no unfamiliar rectifier components that may cause confusion and delay.

7 The Cutler-Hammer System is the safest of all systems.

Complete preventive safety is established as standard in the Cutler-Hammer Drive and Control system. Only fully intentional operation is possible. Bell and light warning is compulsory not only to inching the press but to acceleration to running speeds.

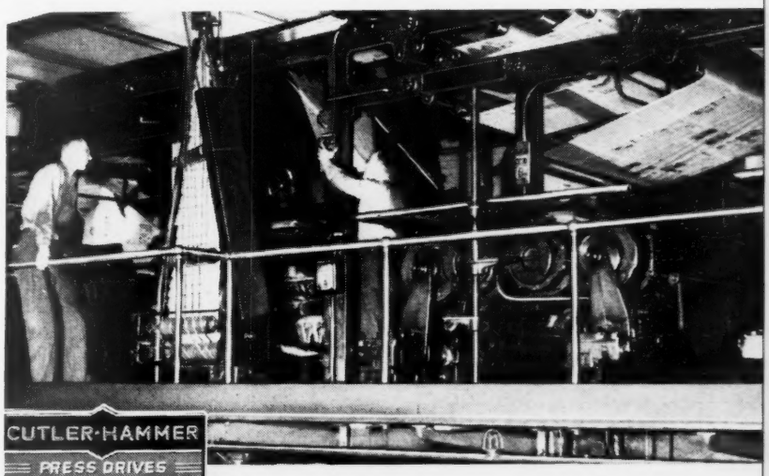
Weigh the above features carefully. They point the way to more dependable, economical and productive operation. CUTLER-HAMMER, Inc., 1460 St. Paul Ave., Milwaukee 1, Wisconsin.

CUTLER-HAMMER
PRESS DRIVES
C-H

Cutler-Hammer Press Drives and Control in

CUNEO EASTERN PRESS PLANT

These Babcock 64 page 2 color magazine presses in the Cuneo Eastern Press Plant at Philadelphia are equipped with Cutler-Hammer a.c. 2 motor press drives and control.



CUTLER-HAMMER
PRESS DRIVES
C-H

Cutler-Hammer Press Drives and Control in

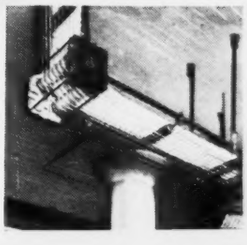
YONKERS HERALD-STATESMAN PLANT

The prominent New York State newspapers, Yonkers Herald-Statesman, New Rochelle Standard-Star, White Plains Reporter-Dispatch and others published by the Westchester County Publishers Inc. are all printed on presses equipped with Cutler-Hammer Drives and Control.

Cutler-Hammer Cylinder Brakes

Stop presses safely in approximately 3 seconds, completely relieving gearing of excessive forces and harmful shocks. Each brake individually adjustable yet automatically coordinated with other brakes.

CUTLER-HAMMER
PRESS DRIVES
C-H

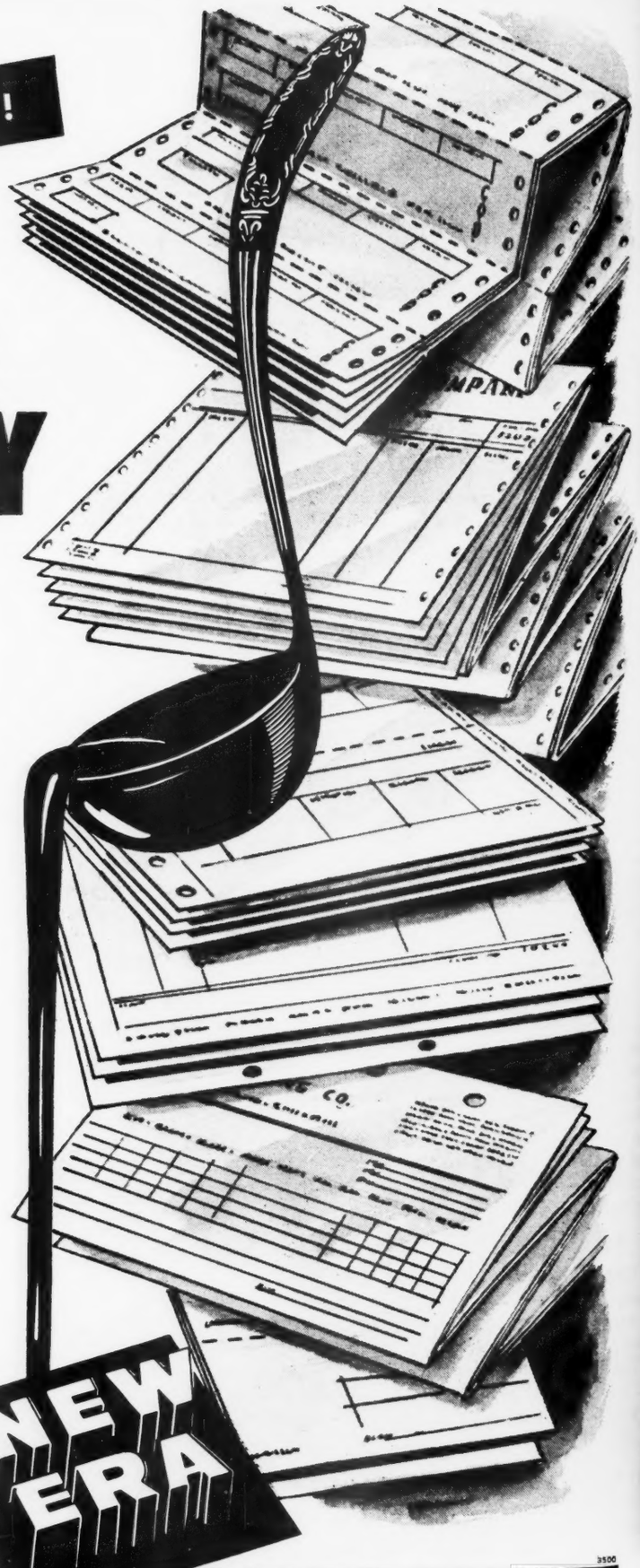


Cutler-Hammer Newspaper Conveyors

Used in practically every conveyor-equipped plant in North America. Standard Duty handles up to 56 pages at any speed up to 60,000 I.P.H. Heavy Duty handles up to 96 pages at any speed up to 60,000 I.P.H.

SHEET-FED PRINTERS!

Why Spread the GRAVY so thin?



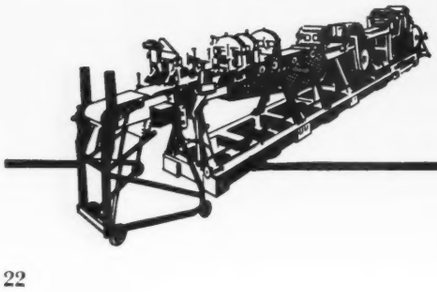
Get ALL the profits on snap-outs and continuous forms!

There's good rich gravy in 5,000 to 30,000 runs of snap-outs and continuous forms. So *why* farm out these highly profitable jobs?

Bulletins 11 and 12 show you how one NEW ERA Roll-Fed Flat-Bed press and auxiliary units can print multicolor jobs on one or both sides with *flat* electros, type, or rubber plates . . . punch, die-cut, slit, insert, reinforce, patch, eyelet, perforate, and number. Finished product is completed in one operation either slit, cut-off, rewound, or zig-zag folded. You do it on ONE press assembly, with ONE pressman, ONE TIME through the press. Speed? 7,500 an hour PLUS!

And, your extra profits pay for the equipment as you use it . . . leave you plenty of rich gravy besides!

Write for Bulletins 11 and 12. Learn how you can step ahead of competition, offering better prices and better delivery of tickets, labels, office and factory forms, shipping and merchandise forms, and other specialties. Ask us for Bulletins 11 and 12 today.



NEW ERA

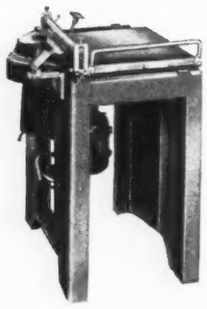
Manufacturing Company

374 Eleventh Avenue, Paterson, New Jersey

Getting the facts of life is largely a matter of knowing where to get the facts. Your best source of information are people with the most know-how. The people with the most know-how in printing problems are likely to be those with the broadest background of experience and the most comprehensive equipment and personnel for research and development. To keep in touch with important printing ink information, keep in touch with IPI. You will find the nearest IPI branch conveniently located.

[redacted]®

Improve Your Plant Efficiency – Reduce Costs – Increase Profits with MORRISON SAW TRIMMERS and other Equipment

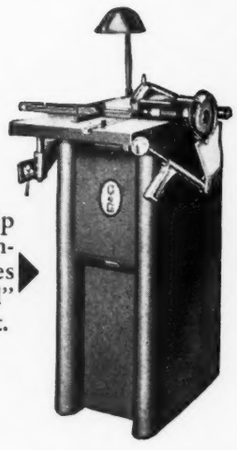


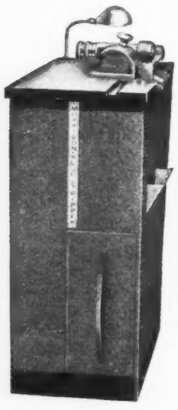
MORRISON PLATE BEVELER

Puts a perfect, burr-free shoulder or bevel on all plates. Cutters work from edge of plate, not the top. You get a smooth die-straight cut every time.

MORRISON MODEL 45 SAW TRIMMER

With pistol grip saw blade attachment. Features "Trigger Speed" saw adjustment.





MORRISON SLUG STRIPPER

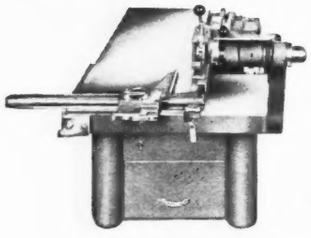
"Proves itself to the men within 24 hours." Makes it easy to strip the face of any slug or type character to the exact thickness needed for base heights.

MORRISON ROUTER AND TYPE HIGH PLANER

Saves time in making corrections and changes, saves make ready time by having all cuts precision height. Has exclusive Morrison micrometer height gauge. Allows routing to center of a 34" cut.

MORRISON MODEL 3-A SAW TRIMMER

Clamps the work behind the gauge for improved visibility, easier handling, and greater accuracy. A must for economy and efficiency minded composing rooms.



MORRISON MODEL "45" SPECIAL

Here's a low-cost saw trimmer that embodies most of the features of the higher priced Model "45" and Model 3-A, with many of the parts and attachments interchangeable. "Behind the gauge" work clamp is standard, but conventional "ahead of the gauge" clamp may be supplied as optional equipment. Also available in a cabinet model.

Other Morrison equipment includes: Shop material cabinets. waste receptacles, Universal saw blades, router bits, and jig saw blades.

Symbol of Operating Economy

THE MORRISON COMPANY MILWAUKEE WIS.

THE *Morrison* COMPANY

PRECISION MACHINES FOR THE GRAPHIC ARTS INDUSTRY

125 W. Melvina Street, Milwaukee 12, Wisconsin

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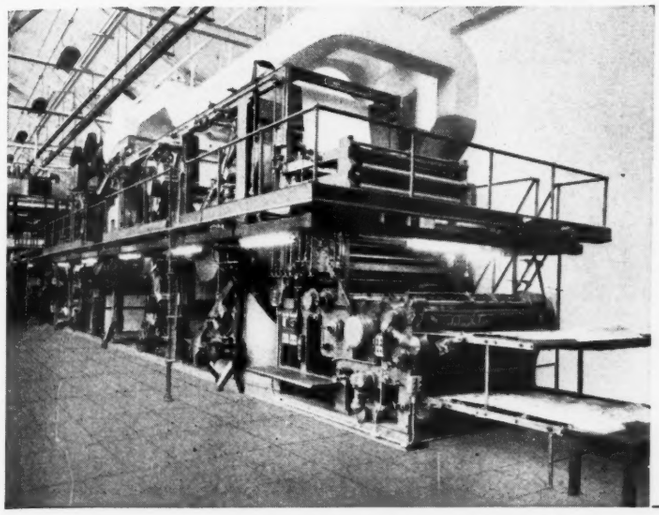
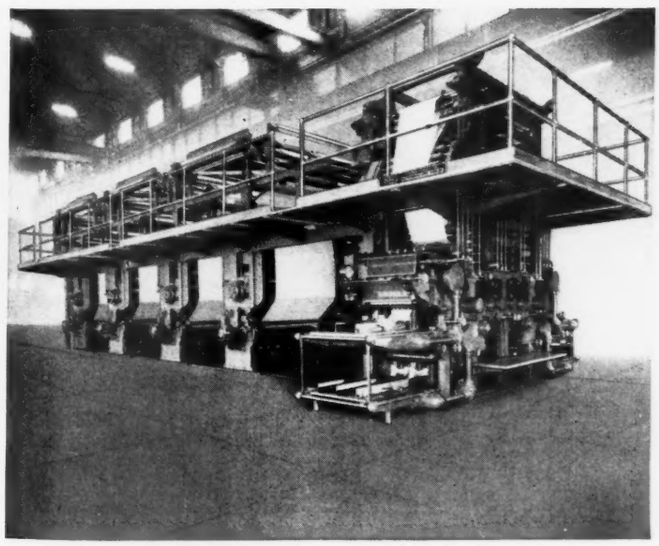


are printed on Hoe Presses

Hoe Presses provide the fine impression, sharp reproduction and accurate fold required for the printing of the finest quality publications. With their continuous operation, they give high net production; with notably low maintenance.

Hoe Rotogravure Presses



do high quality work on big volume jobs

The attention-compelling effects demanded in printing mail-order catalogues, and newspaper comics, supplements and magazine sections, are assured when the material is reproduced—in monotone or multi-color—on Hoe Rotogravure Presses.

One of the many outstanding features of this equipment is the Hoe automatic pressure control, which eliminates the need of making readjustments whenever the impression has been lifted, a big time-saving factor.

R. HOE & CO., INC.

910 East 138th Street New York 54, N. Y.

BRANCHES: BOSTON • CHICAGO • SAN FRANCISCO
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For maximum efficiency these presses are equipped with Hoe Reels, Automatic Tensions and Full-Speed Web-Splicing Mechanisms, so that a constant color register is maintained and slowdowns are eliminated.

TRADE YOUR DROSS FOR MOR-TIN

The more dross you have, the more tin you need to tone up your metal, because dross steals good metal, especially tin, from the melt.

You can get the tin and make substantial savings at the same time. Just trade in your dross for Federated MOR-TIN® Metal. You need not make a large cash outlay because your dross allowance is substantial.

Add a pound of MOR-TIN to the metal in your pot for every pound of dross you take out. Chemical balance of the metal is immediately restored and maintained at a point which assures you sound, close-grained, durable casts which print with hairline sharpness.

For more information . . . for fast delivery . . . call or write the near-by Federated office. There are 22 across the nation.

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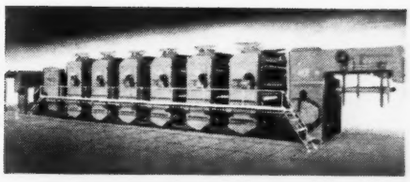

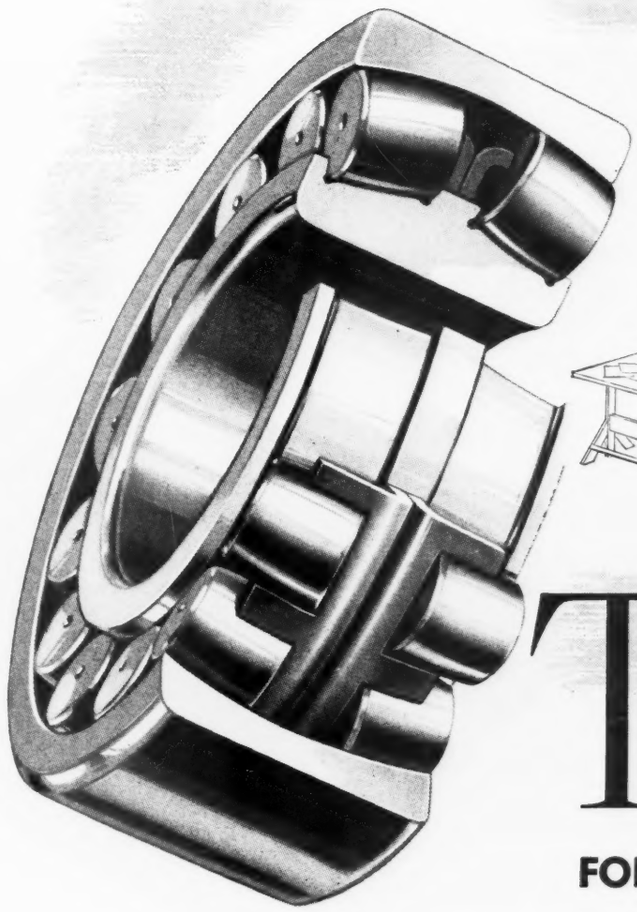

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integrity • craftsmanship • metallurgy
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SKF INDUSTRIES, INC., PHILADELPHIA 32, PA.— *manufacturers of* SKF *and* HESS-BRIGHT *bearings.*

Model "E" Star Automatic Quadder

SYNCHRONIZED WITH MOHR SAW

Time has shown the STAR Quadder to be a field-proven success—a known quantity in modernizing old machines.

Usage is now proving the Model "E" to be a still greater production aid.

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EACH OPERATION SAVED IS MONEY EARNED!

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Making type and decorative material of the highest quality, the

MONOTYPE-THOMPSON TYPECASTER

. . . is in every respect a complete type foundry. Monotype character matrices, to and including 48 point, are available for casting on this machine.

A highly specialized machine for making those materials which are used so extensively in every composing room: Rules, Leads and Slugs, in continuous strips or cut to labor-saving lengths; Column Rules and Strip Ornamental Borders; Single-Column Want-Ad Rules, Braces, also Cut-Off and Decorative End Dashes; 24, 30 and 36-point "high" and "low" metal base and furniture.

Descriptive folders on the MATERIAL MAKER and the MONOTYPE-THOMPSON available on request.

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LANSTON MONOTYPE MACHINE COMPANY, 24th at Locust St., Philadelphia 3, Pa.

BRANCH OFFICES: 116 Spring St., N. W., Atlanta 3, Ga. • 170 Summer St., Boston 10, Mass. • 216 W. Jackson Blvd., Chicago 6, Ill. • 441 Lexington Ave., New York 17. N. Y. • 55 New Montgomery St., San Francisco 5, Calif. • IN CANADA: Monotype Company of Canada, Limited, 77 York St., Toronto 1, Ontario, Canada

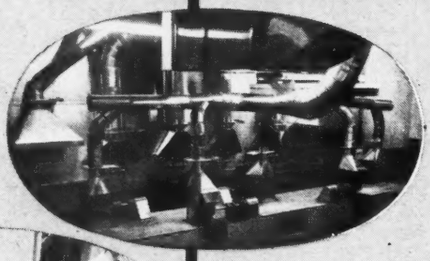
Specify MONOTYPE For the Finest in Printing

No-Fuss-No-Muss....

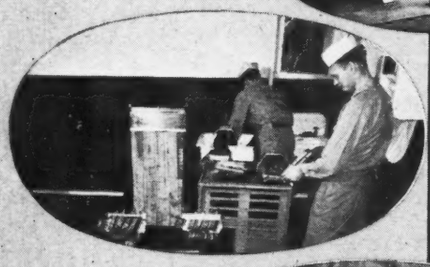
WITH

SERVICE

New fonts and sorts shipped from matrix manufacturers are checked against customer's color charts before applying color.

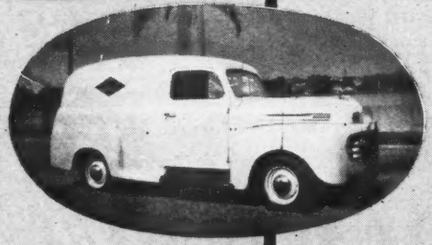


Modern processing rooms in Matrix Contrast plants where matrices are treated before application of colors.

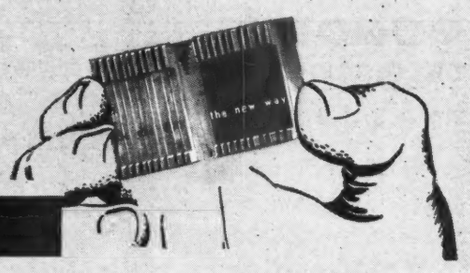


A Matrix Contrast Service Crew operating portable processing equipment in a newspaper plant.

It has taken over 25 years to perfect Matrix Contrast Service. Now, your matrices are treated by a time-tested process that will not flake off nor gum up your machines. Newspaper publishers everywhere will testify to the economical advantages of the Matrix Contrast Method . . . It's clean, it's proven, it lasts. And, too, there are six service branches and 31 trained service crews ready and equipped to give immediate attention to processing your matrices. When you order Matrix Contrast Service, you can forget about the cleaning and processing of your matrices. Your present matrices are treated in your plant by our well-trained technicians without interrupting your schedules. And, new matrices are delivered several times daily from the matrix manufacturers, located in Brooklyn, to our New York plant, where the reference marks are processed day or night. Our Chicago Service Station also receives deliveries several times daily from the Chicago branch of matrix manufacturers and is equipped to operate 24 hours a day.



Typical Matrix Contrast Service Truck which some of our 31 crews use to process matrices in your plant . . . day or night.



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Useful Methods

for Commercial Graphic Arts Printing and Plate Making Plants

METHODS for facilitating work in the commercial branch of the industry were described by Craftsmen at the Fifth District Conference, Intl. Assoc. Printing House Craftsmen, held in Indianapolis, Ind., on June 16. The session was organized by H. Guy Bradley, Production Mgr., Printing Div., The Eli Lilly Co., Indianapolis. The session was unique because of the voluntary method of presentation. Chairman Bradley stated no claim was made for originality in ideas. The main objective was to present Craftsmen with useful information which could be applied in plant practice. In the following summary, the complete discussion is not being reported, nor are all of the ideas presented at the meeting included because of editorial space limitations.

To start off the session, Mr. Bradley outlined some methods used regularly in the Lilly plant, as follows:

To Separate Sticking Sheets

IN some cases, Gremlins do their work in spite of precautions taken and the watchfulness of the pressman. When a small area on printed sheets causes the sheets to stick together, go over the back of the sheets with a hot iron. The heat softens the varnish in the ink so that the sheets can be separated without injury to printing.

Heavy and Soft-Bodied Halftone Inks

WE have developed, in cooperation with an ink maker, a halftone black ink which can be used on various grades of paper stock. The body is very heavy and it is highly toned. We use a companion ink of the same tone but having a very soft body. We use this ink on single color presses for work requiring a dense black. On two-color presses, the soft-bodied ink is added to the heavy-bodied ink for the second-down ink to secure proper trapping. The soft bodied ink is also used as a reducer on single color presses. When using the soft bodied ink the color is not cut as is the case with most reducers.

Overprinting Gloss Ink

IN cases where a gloss ink color will not overprint another, it may be caused by stock that is too cold. The remedy is to warm the stock. This will soften the varnish and give it enough tack to trap the second color. In one case, the first down color was yellow. When overprinting with red gloss ink, it would not "take." The stock was left overnight in a warm atmosphere and the red ink printed properly the next morning.

Eliminates Reverse Plate

TO obtain opacity for blue print machines for offset platemaking, a type form may be printed two sides in one operation. This is done by printing one side of the sheet in the regular manner and at the same time offsetting the image on the reverse side with one impression. In one instance, the opaque proofs are printed on a Miehle Vertical press fitted with a double rolling attachment. An impression is taken on the tympan before printing the sheet, then when the regular impression is taken, the sheet prints in the regular way on one side of the sheet and is offset from the tympan on the other.

Washing Cold Plates to Avoid Picking

IF you must print from cold forms, don't wash them with high test gasoline. The volatile liquid evaporates quickly, seemingly causes the plates to be colder, and in turn the effect is that the ink is too stiff. If the plates must be washed while cold, use kerosene. The best plan is to keep the forms warm.

Lambert on Magnesium Engraving

ROLAND LAMBERT, Manager of Service Engraving Co., Indianapolis, spoke enthusiastically on the subject of magnesium photoengravings. He asserted Indianapolis is magnesium conscious with respect to photoengravings. The development of magnesium engravings has been accelerated to compete with the offset process. He disclaimed any credit for pioneering in the field but that Dow Chemical Co. had given photoengravers something new with which to work. By comparison, engravers recently have had to think of cost reduction when making zinc or copper 11 pt. plates. He exhibited a number of color process jobs printed from magnesium plates. The light weight of magnesium is a distinct handling advantage. With patent base mounting, magnesium plates have additional advantages. He stated the manufacturer can roll down magnesium plate stock within less than 0.002 in. accuracy. He related he had exposed magnesium plates to the weather for months without deterioration. Where plates are to be used

Fig. 1.—This illustration shows the keyline acetate sheet used in the printing plant of The Eli Lilly Co., Indianapolis, Ind. The sheet is used to line up forms for a booklet. Time is saved both for the makeup man and the pressman. There is one of these acetate sheets for each publication job in the Lilly plant. The limit lines are scribed on the sheet on a lineup and register table. After use, the inked impression can be cleaned off readily.

for repeat runs, it is a simple matter to wash off the ink thoroughly and put the plates in dry envelope storage until needed. If a national emergency arises, magnesium plate stock will be plentiful. He said: "Sure, there are technical problems which have to be faced with any new product, but these problems are being overcome rapidly."

Keyline Layout on Acetate

LOCKUP Supervisor O. G. Klein described a means (Fig. 1) for avoiding congestion at the lineup and register table and for enabling the makeup man to impose booklet forms more accurately. Considerable makeup time and press down time is saved through the method employed in the Eli Lilly Co. printing plant, Indianapolis, Ind.

A number of the Lilly publications are of fixed sizes. The means for checking forms quickly consists of a 0.007 in. thick transparent acetate sheet of suitable size. (The one shown in Fig. 1 measures 24 in. by 35 in.) The acetate keyline sheet is used for 8, 16 and 32 page booklets of varying trim sizes.

The acetate sheet is scribed on the register and layout table with lines corresponding to page size, folios (if any), bleed illustrations and spacing between pages at sides and between the tops of opposing pages. After the pressman has made ready the first form on the press, he registers the acetate sheet to the form and sends it to the makeup for OK.

After the first form has been OKd, the makeup man can then go ahead and make up the balance of the forms for the job. Likewise, as each form is put on the press (or presses) the pressman pulls an impression of the form on the acetate sheet for OK. Each succeeding form proof is checked against the first proof on the acetate sheet. After the job is completed, the ink can be washed off the acetate sheets for future use. This method eliminates the time-consuming work of taking each page proof separately to size and assures that all pages in a job are being checked with a single master keyline layout sheet. On regular publication work, these keyline layouts can be filed for use month after month.

Plate Pre-Press and Press Makeready Methods for Color Process Printing

---

EARL BIERBAUER, Superintendent of The Baring Press, Detroit commercial printers, discussed interestingly two methods employed in doing color process work in the Baring plant. A brief outline of the two methods is presented below. The first of these was the Bishop process of pre-press treatment for curved color process electros to be printed on a Cottrell-Claybourn five-color rotary press. The other method was for making ready flat four-color process plate forms for printing on cylinder presses with the plates made up on grooved patent base. Mr. Bierbauer exhibited specimens of booklets printed in four-color process by both methods. It was evident to those listening to Bierbauer that the results are beautiful and that skill still is needed when relieving plates by the one process and for press makeready by the other process.

The Bishop pre-makeready mat is used for preparing dies which are used for relieving printing plates so that the printing surface varies in height according to the values in the halftone illustration and unscreened type matter. Thus, solid areas in the plate are highest, while unscreened type matter carries the lowest printing surface.

The Bishop mat itself consists of four laminated layers. Three layers are 0.002 in. thick each while the base sheet is 0.003 in. thick, or a total of 0.009 in. for the four layers.

In this method of plate pre-makeready, a male and a female die are prepared by the platemaker. When these are placed in register on either side of the plate, they serve as dies when pressure is exerted on the "sandwich" to reform the printing surface of the plate. After subjecting the plate to pressure, the bottom of the plate is shaved smooth.

The platemaker works from a proof taken on the top sheet of the laminated mat. When preparing the male (top) die, the platemaker cuts away sections of the three laminated layers (0.006 in.) corresponding to the solids in the plate. For the middletone areas he cuts away one (0.002 in.) layer. For the highlight areas, he cuts away and peels off two layers (0.004 in. thick) corresponding to the highlight areas. For the type matter areas, the layers in the mat are left undisturbed.

After the male mat, or die as it may be called, has been prepared according to the plate areas which are to be relieved, a female mat or die corresponding to the areas in the male mat is prepared. This die is just the opposite in surface from the male die. The male die is placed in register on top of the plate and the female die is placed underneath the printing plate. With suitable smooth metal plates placed over and under the printing plate, the assembled components are passed through the Bishop plate treating machine.

The pressure of the rollers in the Bishop plate treating machine reshapes the plate by driving the type, highlight, and middletone areas downward to relieve the plate according to proper printing plane with the solid areas higher than any other in the plate.

After a set of color process plates has been relieved, the lower mat is removed from each plate. The plate with the upper mat or die in place is inverted and is passed through the plate forming (curving) and shaving machines for proper curvature and to shave the back of the plate in order to bring it to proper thickness. Thus, the printing surface is relieved to secure proper printing pressure while the base of the plate is consistently level throughout its area. (See March-April 1949 issues of *Printing Equipment Engineer* for description of Bishop processes.)

Mr. Bierbauer explained that when mounting the plates on the Cottrell-Claybourn press, two sheets of 0.003 in. s&sc paper (total 0.006 in. are placed

under each plate. These sheets provide a cushion during impression pressure which prevents plate breakage on the press.

Makeready for Flat Color Plates

THE other method discussed by Mr. Bierbauer is related to a makeready method for printing color process work from flat plates mounted on patent base on cylinder presses in the plant of The Baring Press.

The materials needed, are listed as follows:

Ink—Cover Red No. 5377A, Chas. Eneu Johnson & Co.

Powder—FamoWhole Buckwheat Flour, Harris Milling Co., Mt. Pleasant, Mich.

Shellac—1½ lbs. Orange Shellac in 1 gal. glass jar. Fill jar with denatured alcohol which will dissolve the shellac in about two days. Shake twice each day.

Gun—DeVilbiss, Type GCS No. 501 with which to spray the overlay.

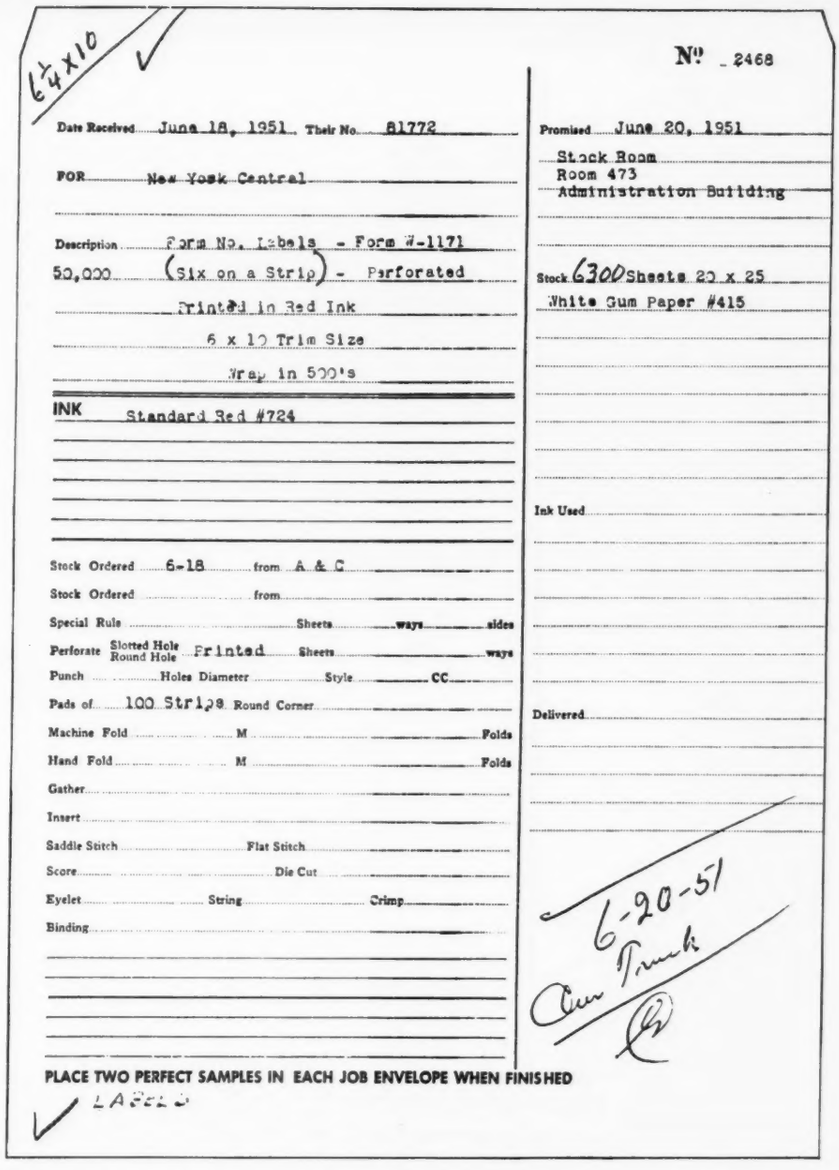
Lacquer—Clear lacquer to brush over the overlay.

Brush—Medium texture, 2 in. wide.

Procedure—The packing on the cylinder is arranged as follows: A sheet of 0.003 in. s&sc, an oiled draw sheet 0.006 in. thick; an unoiled draw sheet 0.006 in. thick, and a 0.003 in. thick sheet of Westvaco Inspiration is next.

The form with the plates mounted on patent base is locked on the press. The next move is to pull an impression on an s&sc sheet to see if any of the plates need underlaying. After the underlays have been checked to bring the plates type high, and while the form is being lined up, ink up the press with overlay ink, using enough ink to just about fill up the cuts. Pull an impression on s&sc stock on top of one sheet of stock on which the job is to be printed. After this impression is pulled, do not allow the form rollers to pass over the form again. Lift out form rollers and pull a second impression, the same as the first with just the ink remaining on the form after first impression. *This is the sheet to be used for overlay.*

Lay this sheet on a table and put enough flour along the edge of the sheet so that it can be rolled back and forth over the wet printing. Then shake off all loose flour and scrape off powder over type and areas where overlay is not required. The next step is to put the sheet on the board in vertical position and spray with shellac from the spray gun. This will bind the powder and ink to the sheet and will dry in about 5 min. Next coat the overlay with lacquer using the 2 in. paint brush. Let dry for about 5 min. and go over the overlay with fine sand paper to smooth it out. Overlay is now ready to hang on the press in convenient sections.


6¼ X 10

No. 2468

Date Received June 18, 1951 Their No. 81772

FOR New York Central

Description Form No. Labels - Form #-1171

50,000 (Six on a Strip) - Perforated

Printed in Red Ink

6 x 10 Trim Size

Wrap in 500's

INK Standard Red #724

Stock Ordered 6-18 from A & C

Stock Ordered from

Special Rule Sheets ways sides

Perforate Slotted Hole Round Hole Printed Sheets ways

Punch Holes Diameter Style CC

Pads of 100 Strips Round Corner

Machine Fold M Folds

Hand Fold M Folds

Gather

Insert

Saddle Stitch Flat Stitch

Score Die Cut

Eyelet String Crimp

Binding

Promised June 20, 1951

Stock Room
Room 473
Administration Building

Stock 6300 Sheets 20 x 25
White Gum Paper #415

Ink Used

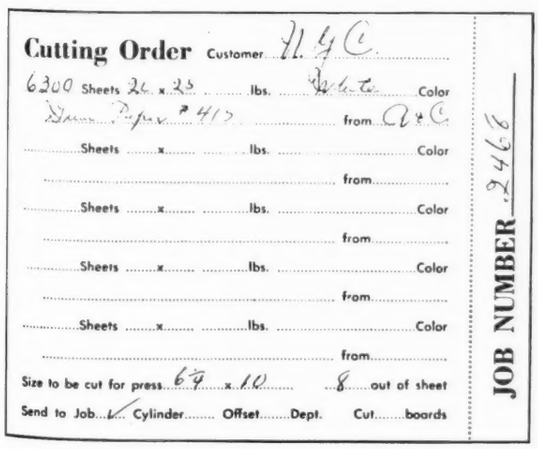
Delivered

6-20-51
Cen Truck

PLACE TWO PERFECT SAMPLES IN EACH JOB ENVELOPE WHEN FINISHED

LABELS

Fig. 2.—This job envelope used in the Dugan-Millis, Inc., commercial printing plant, Cleveland, measures 8¼ in. by 11½ in. Job envelopes are common appurtenances around the shop, but Superintendent Wise stressed that they should be filled out completely. Cost reduction is essential in this inflationary period. The figures and check mark in upper left corner indicate that stock for the job has been cut and delivered to the pressroom. Check mark and word Labels in lower left corner indicate that package end labels (Fig. 4.) have been imprinted.


Cutting Order Customer N. Y. C.

6300 Sheets 20 x 25 lbs. White Color

Gum Paper #415 from A & C

Sheets x lbs. Color

from

Sheets x lbs. Color

from

Sheets x lbs. Color

from

Sheets x lbs. Color

from

Size to be cut for press 6¼ x 10 8 out of sheet

Send to Job ✓ Cylinder Offset Dept. Cut boards

JOB NUMBER 2468

Fig. 3.—Original of this Cutting Order measures 6¼ in. wide by 5 in. deep and is printed in black ink on canary bond. The perforated end strip bearing the job number is torn from the cutting order and inserted in the paper pile before delivery, in this instance, to one of the job presses.

Cutting Some of the Production Corners

"THE shortage of skilled help, high hourly wage rates and competitive prices have caused plant executives to cut production corners wherever possible," stated George Wise, Superinten-

Quantity 500 Strips
Form No. W-1171
Your Order No. 81772
Date June 1951
Description
FORM NO. LABELS
Six on a Strip
DUGAN-MILLIS, INC. . Printers and Lithographers
1426 West Third Street - MAin 1-3031 - Cleveland, Ohio

Fig. 4.—End label for packages used in Cleveland's Dugan-Millis printing plant. Original 4 3/8 in. wide by 2 3/8 in. deep. Printed on white gummed stock. Type matter is in dark blue ink; the light blue border around the edges of the label is 3/16 in. wide. Imprinted information for the job is in black ink.

dent, Dugan-Millis, Inc., Cleveland printers and lithographers. Shop methods and detail items which have received little or no executive attention in less inflationary times now are being subjected to closest scrutiny to lessen production costs.

Mr. Wise discussed briefly the production routine followed when orders for jobs are received in the Dugan-Millis plant.

THE JOB ENVELOPE—The job envelope (Fig. 2), of course, is a familiar thing. However, it should be made out in full detail with all information used in estimating the job as to trim size, showing amount and grade of stock to be used, how many to set or run up, whether the job is to be letterpress or offset, customer's order number, date wanted and place of delivery. These may seem to be minor details, but when recorded in full on the envelopes, they can save many errors and money.

The figures and the check mark in the upper-left-hand corner signify that the stock for this job has been cut and has been delivered to the pressroom.

The check mark with the word Labels in the lower left-hand corner indicate that the labels (Fig. 4) for the packages have been placed in the job envelope (Fig. 2) with all of the necessary information required either imprinted on the labels or filled in with pen if there are not too many packages.

STOCK CUTTING ORDER—A stock cutting order in duplicate (Fig. 3) should be made out as soon as possible after receipt of the job envelope by the superintendent. This can be done either by the superintendent or the executive in charge of production. The order should show the stock to be used, the amount and size, where the stock is to come from, size when cut, amount out of the sheet, direction of grain, and if to be padded, the boards would also be cut. The job ticket number should be inserted in the pile of stock and sent to the department where it is to be printed.

COMPOSITION—If the job is to be letterpress, all forms should be proofread, imposition and register checked before going to press. In locking up the form for the press, the position and gripper edge should be noted carefully. Improper form lockup can be costly if the grippers smash into the form.

PRESSWORK—It is important to have the proper ink for the job before going to press. A lot of time may be lost if the right ink is not available. A sheet should be pulled for checking position and for making corrections or alterations. After this has been done the job is made ready, after which a final sheet should be OKd together with the quantity to be run, date of OK and the initials of the party making the OK. In this way, a lot of arguments will be eliminated.

BINDERY—All instruction to the bindery should be in writing as to collating, guide edges, stitching, punching and trim size.

PACKAGE END LABELS—All packages should be wrapped uniformly, neatly and securely. Each package should bear an end label (Fig. 4) properly imprinted showing the amount of contents, form number, customer's order number, date of printing and description of the job. The skeleton end labels are printed in large quantity for regular customers and as many labels are imprinted as there are packages in the job.

DELIVERY—The date when the job has been promised is of great importance. Sales meetings are based sometimes by these promises. Late or poor delivery may mean the loss of a customer. A delivery receipt should be made out in duplicate, showing the number of packages, amount of delivery, form number, description, customer's order number and job ticket number.

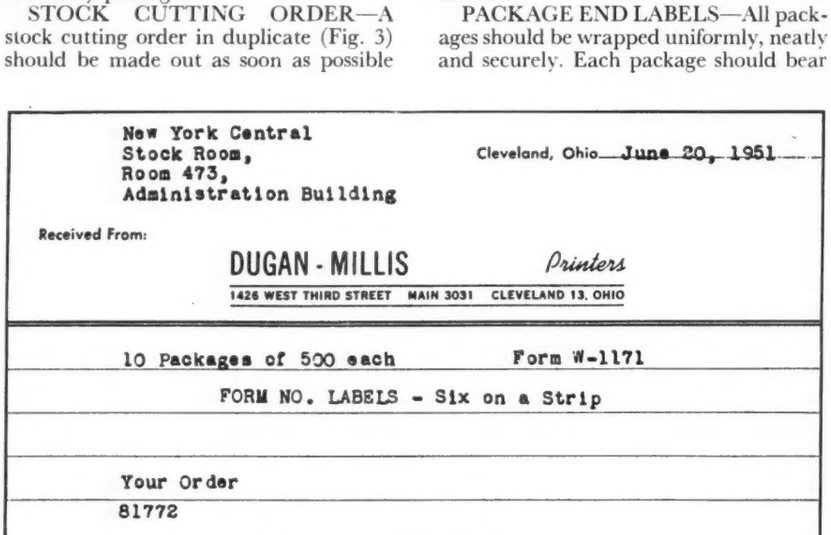

New York Central
Stock Room,
Room 473,
Administration Building
Cleveland, Ohio June 20, 1951
Received From:
DUGAN - MILLIS Printers
1426 WEST THIRD STREET MAIN 3031 CLEVELAND 13, OHIO
10 Packages of 500 each Form W-1171
FORM NO. LABELS - Six on a Strip
Your Order
81772
Our Order #2468
Received By:

Fig. 5.—Delivery Receipt measures 7 in. wide by 4 in. deep. Original is white bond; duplicate is pink bond. Receipt bears all essential information.

Unloading Running Press—Preventing Offset

HOWARD N. KEEFE, Manager of Arrow Press, Letterpress Div. of the Cincinnati Lithographing Co., Cincinnati, O., discussed freely a retractable plywood board and holding mechanism for the delivery end of a cylinder press. It is claimed its use increases press production from 8% to 10%. The device is used without stopping the press to unload the printed sheets. Thus, where desirable, it may also be used to split up loads at the press delivery into short piles to lessen pressure on the bottom sheets to reduce offset. The device also provides a means for multiple decking of the sheets in the delivery pile to prevent offset and or smear of the ink. The holder is attached to the top of the press delivery frame. A hand lever controls movement in or out of the rails which support the plywood board. In effect, when the delivery pile has nearly reached maximum height, the retractible rails are moved inwardly and the plywood board is slid along the rails. The printed sheets on the skid beneath may now be removed. After a new skid has been placed in position, it is raised upwardly to the plywood board and remains on the skid to support the printed sheets. Through the use of four wooden angle pieces, multiple stacking of the sheets is effected after about 7 in. of sheets have accumulated on the plywood board. Multiple stacking aids in running gloss inks or varnished jobs by making it possible to divide the load into short lifts; the lifts may be racked for drying on ordinary paper skids.

Identification Lines

IN the plant of Typographic Service, Inc., Indianapolis, a simple method is employed to provide advertisements or pages with identification lines. In jobs which are made up without folio or guide lines, wrong pages or forms may find their way into production, or considerable time may be lost in locating and identifying pages which should go into a form. To provide an easy way to identify each page, identification lines can be set of sufficient point size for easy reading. The identification lines, however, are passed through a saw-trimmer to reduce

the height to approx. 6 pt. under type high. The lines can be locked in the form with the pages and furnish the necessary information without printing. If the pages are to be electrotyped, of course, the line will be below the printing surface of the plate. Job or form numbers, publication dates, or other information carried on these below-type-high lines provide an automatically permanent record.

Top Quality Should Predominate

ELMER BREDENSTEINER, Manager, Success Printing & Lithographing Co., Indianapolis, stated developments in the offset process are so fast moving it is difficult to keep abreast of them. As in other branches of the Graphic Arts, ways and means had to be found to eliminate or reduce expensive operations. In his plant, color separations are made by a masking method. He discussed the utility of several kinds of offset plates. For short runs, the albumin plate is best; for press runs up to 800 thousand, the deep-etch plate is in order. Over that quantity, the Aller plate or another bi-metal plate can be used. A pungent remark made during Mr. Bredensteiner's discussion was: "It is wrong to stress the length of time press blankets and rollers can be used; quality should be stressed by replacing them when they interfere with quality."

Printing Gloss Inks by Offset

DON M. NIXON, Bodine Printing Co., Michigan City, Ind., reported that gloss inks can be used in printing by the offset process. With the cooperation of the paper people, the ink manufacturer and the pressman, it is now possible to print with gloss inks. So far as his company is concerned, printing with gloss inks by offset has been accomplished in the past few months. Another item mentioned by Mr. Nixon was that reproduction proofs are sprayed with a plastic and are dried by infrared heat. He also reported that an Eastman 0.005 in. thick acetate sheet covers the cylinder packing on the reproduction proof press. Ink may be removed by wiping with a cloth. The acetate sheet is very good for backed-up proofs.

Lester E. Petersen, Production Mgr., Peterson Printing Co., South Bend, Ind., mentioned, among other hints, that Scotch tape is used in place of string to bind small forms or units of type forms. He also said that Scotch tape is used to hold a Monotype type line together for ease in handling when doing imprinting work by letterpress.

Henry B. Roberts, since 1947 Assistant Manager of The Scribner Press, New York, has been appointed Manager of the company to fill the vacancy left by the retirement of Harold Cadmus. Roberts joined the Scribner Press in 1936 after graduating from Princeton. From 1942 to 1945 he served in the U. S. Navy in the Pacific Theatre.

Harold Cadmus retired recently as Manager of The Scribner Press, New York, a position he has held since 1921. Cadmus started with Charles Scribner's Sons in 1899 and has been a director of the firm since 1933. He was associated with the development of printing from molded rubber plates. The first book ever to be printed from plastic plates was completed under his direction in 1943. He has also been associated with the American Institute of Graphic Arts, The Printers' League of New York, The School for Printer's Apprentices, and the School for Bookbinders' Apprentices.

Layouts for advertising reproduced quickly in multiple—Screening type in one operation

"QUITE by accident," relates C. Frank Mann, Composing Room Supt., Louisville (Ky.) *Courier-Journal* and *Times*, "we read an advertisement about a photo copying machine in one of the magazines coming to our desk. This equipment may be used for making multiple copies of photographs, printed or typewritten documents, designs, drawings, charts, and advertising copy layouts. Upon learning that a representative was stationed in Louisville, we requested a demonstration. The results were satisfactory. We then ordered a complete outfit in a size large enough to reproduce a full-page newspaper advertising layout."

For those who are not familiar with this new method of handling newspaper advertising copy, we want to mention that usually there is considerable type composition to be done; in addition, there usually is some photoengraving to do. In some cases, it is inadvisable to cut up the layout into separate pieces in the ad alley for running out the copy to machine operators and ad alley compositors. While most newspapers maintain deadlines for receipt of advertising copy and the advertising departments of stores in general comply with the stipulated deadlines, yet there is so much construction work and photoengraving to be done simultaneously in the preparation of the advertisement that production is slowed up. For instance, it may happen that the photoengraving department, of necessity, must have the engraving copy as soon as possible (where it is included in the layout), and in addition, it is necessary for the markup man to cut up the copy into a number of pieces for the machine operators. In other instances, some advertising departments may wish to keep the original layout intact in the business office, or perhaps the layout may have to be passed along to the newspaper's art department for further treatment.

There is also the desirability of keeping the original layout intact for the proofreader after the composition has been proofed.

From the composing room use viewpoint alone, one can see that in cases where the layout-copy does not lend itself to quick composition, the photo copying machine can be used to make enough prints to permit cutting them up in as many pieces as desired for markup purposes. Even another copy of the complete layout may be made for guidance of the ad alley foreman.

The Portagraph table model photo copying equipment used at the Louisville *Courier-Journal* and *Times* is of ample size to enable reproduction of a full page layout (20 in. by 24 in.). The reproduction or printing mechanism is a complete unit in itself.

The self-contained unit handles original copy up to 20 in. by 24 in. As will be seen in the illustration, the lid when closed is cushioned for all-over contact with the copy and sensitized paper which is laid upon the frosted glass plate in the top of the box. Usually, the layout is placed face up with the emulsion side of the photographic paper also face up. When the lid is closed, all-over contact of the cushion in the lid presses the paper on the glass plate. Lamps within the body of the case are then turned on and the automatic timer is set to turn off the lamps under the glass plate when the required exposure time has been terminated. The photographic paper is then developed, fixed and rinsed in the usual manner in solutions in the trays which are large enough to permit submersion in the developing and fixing solutions.

After fixing, the photographic copy may be dried in a special automatic drying machine maintained at a specific temperature (usually 350 deg. F.).

As will be understood, the first copy secured is a right-reading negative secured by exposure of the sensitized paper to the bank of lights underneath the pane of glass. If a positive is required, it will be necessary to expose the right reading negative in the Portagraph machine and develop and fix the positive in the usual manner.

Average exposure times for the sensitized paper ranges from 15 to 24 sec. Developing times range from 15 sec. to 20 sec. Fixing time is approx. 30 sec. Rinsing time between development and fixing, and after fixing, brings the average total time for securing a wet reproduction to about 5 min.

Screening Type

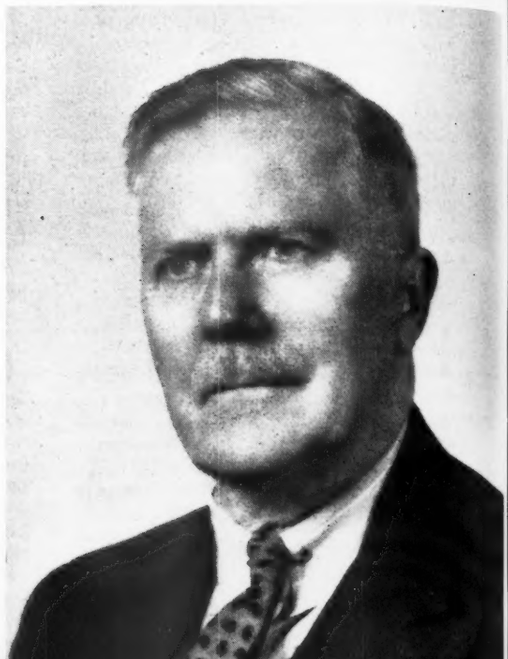
Screened letter effects may be obtained photographically through the use of Craftint transparencies in connection with reproduction proofs. Copies of prints have been made using the Craftint screen. These may be used immediately as photoengraving copy. This eliminates one step in making suitable photoengraving screened copy.

A floor model vacuum seal Portagraph has been announced for larger size copy. The lid is provided with vacuum pressure while printing. The vacuum equipment is housed in the base of the floor model. The copy glass is 33 in. deep by 42½ in. wide.

Elected and Appointed

Officers District Representatives and Committee Chairmen

International Association of Printing House Craftsmen



FRED C. BAILLIE, President. (Also Superintendent, Canadian Bank Note Co., Ottawa, Can.)

J. HOMER WINKLER, first Vice President. (Also Technical Advisor, Battelle Memorial Institute, Columbus, O.)

GORDON J. HOLMQUIST, Second Vice President. (Also Partner, Cole-Holmquist Press, Los Angeles.)

HOWARD N. KING, Third Vice President. (Also Vice President, The Maple Press, York, Pa.)

PEARL E. OLDT, Intl. Executive Secretary. (Also Chairman, Intl. Publications Commission, Cincinnati, O.)

ALBERT L. KOLB, Treasurer, (Also Manager, Printing Dept., Marine Trust Co., Buffalo, N. Y.)

Left to Right:

RUSSELL J. HOGAN, Immediate Past President. (Also President, Wilson H. Lee Co., Orange, Conn.)

TOM MAHONEY, Chairman, Technical Commission. (Also Plant Manager, Regensteiner Corp., Chicago.)

AMADEO TOMMASINI, Chairman, Int. Public Relations Commission. (Also Manager, University of California Press, Berkeley, Calif.)

Left to Right:

HARRY CHRISTOPHER, Chairman, Intl. Membership Commission, and Fourth District Representative. (Also President, Paper Supply Co., Baltimore, Md.)

BASIL M. PARSONS, Intl. Representative-at-Large. (Also Secretary and Sales Mgr., Thomson-National Press Co., Inc., Franklin, Mass.)

A. GORDON RUITER, General Chairman, 1951 Intl. Convention, (Also Letterpress Dept. Supt., Forbes Lithograph and Printing Co., Boston.)

Left to Right:

DeWITT A. PATTERSON, Foreign Representative. (Also Plant Supt., Color Engravers Div., Alco Gravure, Chicago.)

WILLIAM McLELLAN, Immediate Past First District Representative. (Also Sales Representative, Wild & Stevens, Inc., Boston.)

JAMES T. McGOWAN, First District Representative. (Also Manager, Carter Rice and Co., Providence, R. I.)

Left to Right:

THOMAS O. WALLACE, Second District Representative. (Also Secretary, Syracuse Typesetting Co., Syracuse, N. Y.)

HENRY A. SCHNEIDER, Deputy Second District Representative. (Also Production Mgr., Editorial Development Div., Charles Francis Press, Inc., New York.)

ALFRED GILBERT, Third District Representative. (Also Superintendent, W. T. Kirkby Co. Ltd., Toronto, Can.)

Left to Right:
JOHN OSIAS, Deputy Fourth District Representative. (Also Branch Mgr., International Printing Ink Div., Interchemical Corp., Richmond, Va.)

JOHN MOREHOUSE, Fifth District Representative. (Also Central District Sales Mgr., Harris-Seybold Co., Cleveland, O.)

MARVIN R. LOHR, Fifth District Deputy Representative. (He is also Secretary of the Detroit Craftsmen's Club.)

Left to Right:
KEN CRAMER is Southern Deputy Representative for the Fifth District. (Also associated with Ideal Roller & Mfg. Co.)

FIELDING UTZ, Sixth District Representative. (Also President, Milwaukee Printers' Roller Co., Milwaukee, Wis.)

FRED L. BRYANT, Seventh District Representative. (Also Southeastern Representative, Miehle Printing Press & Mfg. Co., Chicago.)

Left to Right:
ROYCE N. KENT, Eighth District Representative. (Also Assistant Supt., Bemis Bros. Bag Co., Omaha, Nebr.)
Left to Right:

BEN EDWARDS, Deputy Eighth District Representative. (Also President, Edwards Typographic Service, Inc., Wichita, Kan.)

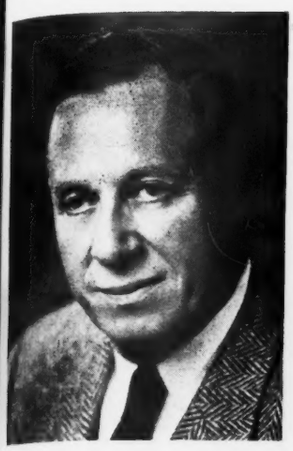
O. B. GRANUM, Ninth District Representative. (Also Owner, Granum & Company, Houston, Tex.)

(This space is dedicated to Sherald Braden whose picture unfortunately did not arrive in time to be included with his fellow District Representatives.)

Left to Right:
RONALD HULL, Tenth District Representative. (Also Branch Mgr., Sears Limited, Toronto, Ont., Can.)

SHERALD BRADEN, Deputy Tenth District Representative.

HAYWOOD HUNT, Eleventh District Representative. (Also Owner, Haywood H. Hunt, Typographer and Printer, San Francisco.)



Left to Right:

LEE FARMER, Twelfth District Representative. (Also President, Pacific Printing Ink Co., Los Angeles.)

BLAIR LORD, Deputy Twelfth District Representative. (Also Superintendent, Rubidoux Printing Co., Riverside, Calif.)

HERBERT THRELFALL, Thirteenth District Representative. (Also President, John F. Greene Co., Inc., Providence, R. I.)

Left to Right:

RUSSELL HIGNELL, Fourteenth District Representative. (Also President, Hignell Printing Ltd., Winnipeg, Manitoba, Can.)

MANNIE HUBBELL, Intl. Historian (Also Production Dept., Neely Printing Co., Chicago.)

HAROLD G. CRANKSHAW, Chairman, Club Bulletin Contest. (Also Printing Instructor, Washington, D.C., Public School System.)

Left to Right:

ALFRED T. PETERS, Constitution and By-Laws Committee. (Also Vice President, Thos. C. Peters Printing Co., Utica, N. Y.)

EDWARD W. STOEHR, Chairman, Printing Week Committee. (Also Production Mgr., The Meerow Press, New York, N. Y.)

Craftsmen Thumb-nail Sketches

Each year, *Printing Equipment Engineer* through these thumb-nail sketches, acquaints its Craftsmen readers with the current new members of the Official Family, International Association of Printing House Craftsmen. Craftsmen who cannot attend the annual convention in Boston or who have not met the International officers may learn something about new Board of Governor personalities through these brief biographical sketches. Also, newer Craftsmen members who have not met the older officers, may get acquainted with them by looking at the picture panel on foregoing pages.

BASIL M. PARSONS, newly appointed Representative-at-Large, has been a member of the Providence, R. I., Craftsmen's Club since 1927 and served that Club for two years as president. Parsons is perhaps better known in Craftsmen circles as Chairman of the Nominating Committee at Intl. Conventions, a post he has held for quite a good many years. He will serve again in this position at the Boston Convention this year. A rather severe heart attack last January forced him to cancel many Club visitations scheduled in his official position. His real hobby, he confesses, is speaking to Craftsmen's Clubs throughout the country on his favorite subject *Printed, Embossed and Die Cut Specialties*. A pioneer of 32 years in the platen press industry, he is Secretary and Sales Mgr. of the Thomson-National Press Co., Inc., Franklin, Mass.

JAMES T. McGOWAN, another New England addition to the International Board, served as president of the Providence Club of Printing House Craftsmen in 1946 and again in 1947. He was selected District Representative at the First District Conference held in Springfield, Mass., this past April. Prior to this date, McGowan served that District as

Deputy Representative. From our information on this gentleman, we judge he has been an active participant in Craftsmen activities for many years, but his modest personality prevents listing his accomplishments. We can report, however, that he is Manager of Carter Rice & Co., Providence, R. I., a firm he has been associated with for 33 years.

HENRY A. SCHNEIDER has been connected with the printing world for over 30 years. The Deputy Second District Representative was president of the Club of Printing House Craftsmen of New York, Inc., from 1948 to 1950. Prior to that, he served as first vice president for two years for the same organization. An active participant in Graphic Arts activities, he is also a charter member of the Printing Accountants Club of New York and the Young Printing Executives Club of New York, and a member of the New York Employing Printers Assoc. He attended Columbia University and New York University. Associated with the Charles Francis Press, Inc., he is in charge of production in the Editorial Development Div.

ALFRED JOHN GILBERT was associated with the formation of the Third District Advisory Council and served as the first secretary-treasurer. At present, he is Third District Representative and a member of the Toronto Club of Printing House Craftsmen. He served as president of the Toronto Club for one and a half years and has been a member of the Club's Executive Board for the last 10 years. Having a particular interest in printing planning and production, Mr. Gilbert is Production Supt. of The W. T. Kirkby Co., Ltd.

BEN EDWARDS' activities in Craftsmen circles resulted in the present Deputy Eighth District Representative serving as president and a member of the Board of Directors of the Wichita Craftsmen's Club and also as president of the Eighth District. A Craftsman of many talents, he is President and Manager of Edwards Typographic Service, Inc., and Secretary of Kel Litho Artists, both of Wichita, Kan. He is a journeyman offset platemaker and stripper, and admits that he enjoys this particular phase of the Graphic Arts best. Edwards also taught printing in Kansas City, Mo., for three years, and has worked as Monotype operator for several Kansas printing plants. He attended the Lanston Monotype School in Philadelphia and Kansas State Teachers College. He is also serving this year as President of the Printing Industry of Wichita.

OLIVER BENNETT GRANUM, printer, machine operator, machinist foreman, superintendent and sales executive, has been active in the Graphic Arts for a half century. The Ninth District Representative from Houston, Tex., is owner of Granum & Company of that city. He is a charter member of the Houston Craftsmen's Club and has participated in that Club's activities as president, vice president and a member of the Board. An interesting note about Mr. Granum is that at the age of 60 he took up flying as a hobby. He received his pilot's license and has made flights over practically every state in the Union. He now owns and flies a Cessna Model 170. Earlier in his career, he was identified with Mergenthaler Linotype Co., Spokane (Wash.) *Spokesman-Review*, and the Portland (Ore.) *Oregonian*.

BLAIR LORD has been connected with the Rubidoux Printing Co. of Riverside, Calif., for the past 16 years where at present he holds the title of Superintendent. The Deputy Ninth District Representative has a particular interest in the layout and design of high class brochure and magazine material. He is a member of the Citrus Belt Club of Printing House Craftsmen which he served for six years as secretary and as president in 1950-51. He was secretary-treasurer in 1947-48 of the Pacific Society of Printing House Craftsmen. Having a flair for writing at an early age, he edited and published a weekly newspaper while in the sixth grade in grammar school. In connection with this, he set the type by hand and printed it on a small hand press.

MARVIN R. LOHR manages to keep himself busy outside his regular occupational duties. He was elected Fifth District Deputy Representative at the Fifth District Conference in June. The Fifth District is comprised of 14 Clubs—more than can be handled for the International by one Representative, so the Fifth District becomes the first to have two deputies. Currently he is serving as Secretary of the Detroit Club of Printing House Craftsmen. He is also Treasurer of the Detroit Printing Supply Salesmen's Guild. He is a member of the Detroit Litho Club and is interested also in Detroit Masonic affairs. His two hobbies are hunting and golf. He is associated with Ideal Roller & Mfg. Co. as Field Engineer.

THOMAS O. WALLACE, since 1934, has worked himself up from errand boy to Secretary of the Syracuse Typesetting Co., Syracuse, N. Y. That in itself is evidence of a man having the initiative to take on the responsibilities that go along with the post of Second District Representative. He has served two terms as editor of *Rough Proofs*, official publication of the Syracuse Club of Printing House Craftsmen. We've tried to obtain more information on this member of the Intl. Family, but about all we can report is a private competition being staged between Wallace's *Rough Proofs* and the Utica (N. Y.) Craftsmen's bulletin, *On the Beam*. It will be interesting to see both clubs' publications on display at the Boston Convention.

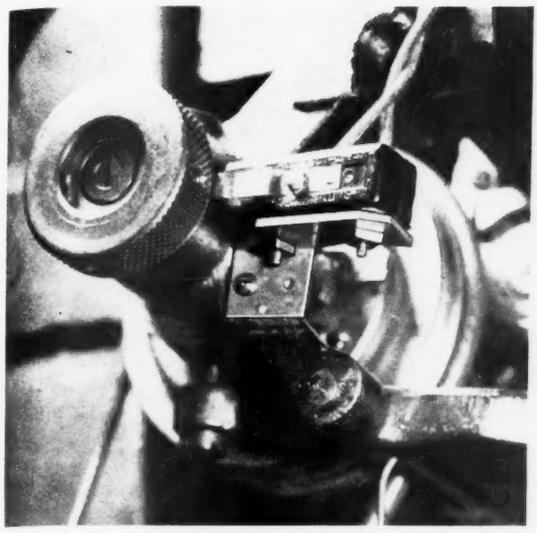
EDWARD STOEHR is one of those steadily plugging Craftsmen who until last year did not attract particular notice so far as the International is concerned. Currently, however, his talents are being recognized. His record is one of multiple activity. This year he is International Printing Week Chairman with portfolio. The impetus given Printing Week celebration throughout the country is a testimonial to his talents. Stoehr is President of the Newark Club and is serving as Secretary-Treasurer of the International's Second District Conference. Professionally, he is Production Mgr. for the Meerow Press in New York, N. Y. He likes color printing, especially since his firm is engaged in producing lots of it.

KEN N. CRAMER is the appointed Southern Deputy of the Fifth District. His official capacity in assisting Fifth District John Morehouse will be to contact the Cincinnati, Dayton, Indianapolis and Louisville Clubs. He became a member of the Cincinnati Club in 1934. In addition to his Craftsman duties, he's First Vice President of Cincinnati's newly organized chapter of the Printers Supplymen's Guild. He attended classes at the University of Cincinnati. His hobby leads him to outdoor life, including fishing and golfing. He's district manager for Ideal Roller & Mfg. Co.

"The Printing Industry"

(Abstracted from an address delivered at the Annual Convention of the Intl. Assoc. of Printing House Craftsmen, Chicago, September 1950, by Lester S. Crowl, President, The Blade Printing and Paper Co., and the Blaco Advertising Agency, Toledo, O.)

WHAT are the profit possibilities for the individual companies for which you work? I can only tell you about the printing industry, and when I say the "printing industry," I refer to what is ordinarily known as the job printing industry where a great many different types of printing are handled within one plant by pretty much the same people. In that phase of our industry there are not the opportunities for the economies of mass production that come to organizations who specialize in a particular kind of work. For example, there are companies in the United States, of considerable size who do nothing except print telephone directories. I think we can all understand how, if our tasks through our plant were limited to the same kind of work day in and day out, it is possible to systematize that work so that you can get a great many ecomomies from those systems, which is known in industry as mass production. In the ordinary printing organization where certain presses may be occupied with a catalog in one color and another press is running another catalog in two or four colors, and another press is running envelope stuffers and price lists, and the composing room is sometimes doing a little display composition and a lot of tabular work, and so forth, it is impossible to standardize and get any of those economies.



View of micro switch mounted on specially made bracket which in turn is mounted on line-composing machine distributor clutch bracket. Switch is of normally open type. When distributor stops, switch is closed and lights a lamp calling machinist's attention to the stop. Devised by R. D. Fisher, Ada (Okla.) *Evening News*.

Machine Signal System for the Smaller Plant

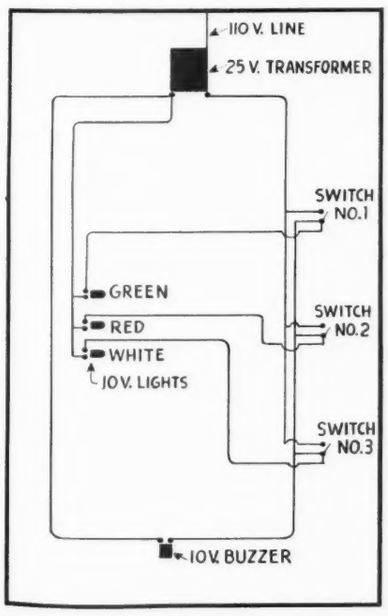
By R. D. FISHER*

*Machinist, Ada (Okla.) Evening News.

FOR our six-machine battery of Linotypes, the writer has installed a distributor stop light-warning system. Suitably wired, the system consists primarily of a transformer, a buzzer, micro-switches and different color lamps for each machine.

A small micro-switch[1] is fastened to a bracket which in turn is mounted on the distributor clutch bracket. The micro-switch is positioned so it just clears the Linotype distributor clutch starting lever flange. If the spiral automatic mechanism becomes locked and the starting lever flange is snapped inward toward the distributor clutch bracket, the switch is caused to make contact. The micro-switch used is of the normally open type. The starting lever flange can be relocated to provide more clearance for the switch itself. However, the switch will work just as readily with the starting lever flange in its original position. The switch can also be applied to outstanding Intertype machines.

[1]Mu-Switch Corporation, Canton, Mass.



Schematic diagram for distributor stop signal light wiring system in plant of Ada (Okla.) *Evening News*. Where there are not too many line-composing machines, different color lamps are used to indicate the identity of the machine. This system with suitable modifications can be used for any number of machines.

In our plant, six lamps (each a different color) corresponding to the number of machines are mounted on a wall board in a convenient location so the machinist can see the board readily. In addition, when a distributor is stopped, a buzzer is sounded. While we use colored lights to indicate the machine, all white lamps could be used, the position of the light corresponding to the machine number.

The wiring system is shown in the accompanying diagram. The diagram indicates hookups for only three machines, but any number of signal lamp combinations can be employed by extending this layout. The overall expense is relatively small.

A 25 v. transformer is interjected between the 110 v. line to prevent the machinist being shocked when working around the distributor.

It is advisable, when drilling holes in the bracket supporting the micro-switch to make them larger than necessary or elongate them, to permit adjustment of the switch in relation to the distributor clutch starting lever flange.

Printing Equipment Engineer's mailing list stencils are symbolized so that every executive's name and position are identifiable. Please help us keep our mailing list up-to-date so that your copy will come to you under your own name. If you have changed your executive position or have moved on to another plant, please tell us about it on a postcard.

Versatile Mechanism

(Reprinted from the *Chicago Typographers Association News-Letter*, February 1950.)

FOR each of the newly invented and greatly publicized typesetting machines there are probably a hundred stored away in damp basements, dusty attics and other places, forgotten years ago by the inventors, many of whom are dead. I recall one such contrivance in particular I saw in a tiny Iowa hamlet thirty or more years ago. The inventor was the proprietor of the local glue factory and had painstakingly assembled the mechanism entirely of discarded articles such as tin cans, bottles, horseshoes, packing boxes, sticks, stones, pieces of string, etc., having used in its assembly (according to his own statistics) some ten million pieces. Without going into details of the appearance of this remarkable mechanism, I will mention a few of its uses. It composed, photographed, and electrotyped type simultaneously, and if desired would read proofs and correct same in an emergency, performing all these operations through the utilization of a mysterious photographic principle which even the inventor himself was unable to explain. In addition, the machine could, would and did milk a cow, walk backwards with its head under its wing, sweep the kitchen floor and substitute for the hired girl on her nights out, which was something!

Uniform Speed For Register Requires Electric Control

IN ORDER to maintain uniform color and register in color work it is important that the press operate at the same speed throughout the run. Tripping of the press and anything else than instant starting and stopping affects both register and inking. Inking is heavier at slower speeds and changes in speed affect the throw of the gripper actuated by the T-head movement used on all but one make of cylinder press through the action of centrifugal force.

So it is evident that automatic feeders must function fully while handling sheets that can be fed consecutively and electric control must afford instant starting and stopping else there will be many imperfect sheets. A push-button system with instant start, instant stop, slow-speed button and also incher for convenience in makeready will be found a good investment in equipment.

Executive-Employee Teamwork Revamps Equipment Layout

THE story behind the revamping of the third floor layout at A. S. Gilman, Inc., Cleveland, shows what can be accomplished through teamwork when production and mechanical executives and employees work together. It is illustrative of the consideration given to employee suggestions by management, the importance and accomplishments of meetings between departmental heads, and the results obtained by making conditions more pleasant for workers. The third floor houses the bindery, offset pressroom, shipping department, and part of the company's paper storage.

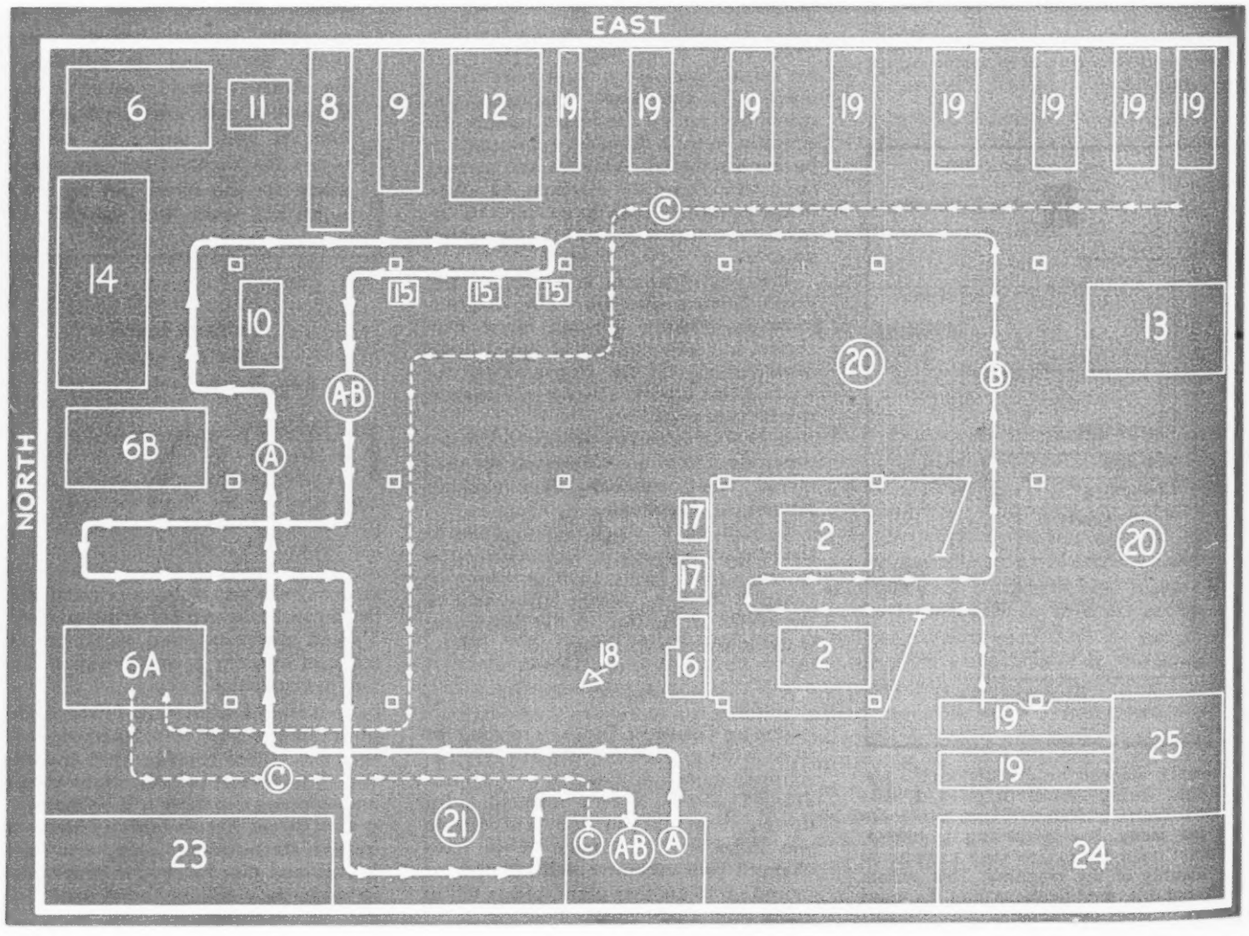
A. S. Gilman, Inc., is a Cleveland printing firm equipped with both letterpress and offset facilities for performing a variety of commercial and publication printing. Monthly magazines, booklets, reports, advertising literature, pamphlets, broadsides, display pieces, etc., are typical of the work produced by the company.

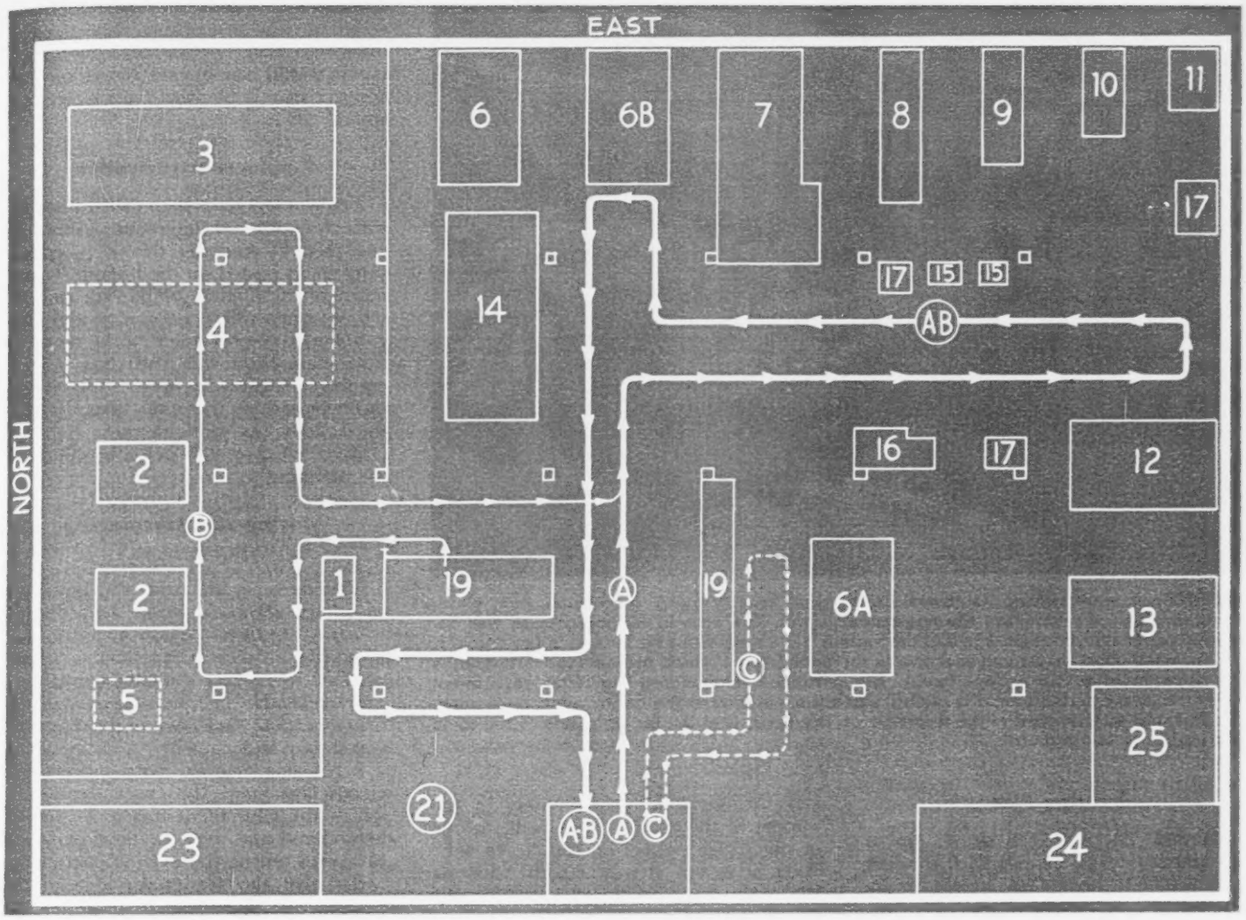
Several faults existed in the workflow on this floor which were considered violations of good printing plant production. The faults, as has been the experience of many other companies, gradually accumulated over a long period of time due to increased business volume. It was found there was too much lost motion in worker operations. Equipment was poorly arranged which necessitated excessive movement of work in process. Back-tracking in workflow movement was also noticeable which caused confusion as well as loss of production time. The production department was having difficulty in obtaining the status

BEFORE ARRANGEMENT DIAGRAM of Bindery, Stock and Offset Pressroom at A. S. Gilman Plant in Cleveland with Workflow Lines.

(For equipment identification see opposite page)

Most of the bindery machines are located in the northeast corner of the third floor. The enclosed offset pressroom which presented the appearance of a department within a department, was so situated that expansion of its facilities was obstructed on all sides by stock storage and bindery machinery. More than half of the East wall of the room was taken up with stock bins while large areas of floor space were devoted to skid stock storage. The heavy workflow line (A) shows the route followed through the bindery by printed jobs which came up the elevator from the first and second floor letterpress pressrooms. Offset presswork designated by the light workflow line (B), starts at the stock bins *19* located on the southwest side of the room, enters the offset pressroom and joins up with bindery workflow (A-B). Prior to the revision of the layout, paper stock to be trimmed for the pressrooms downstairs followed a route shown by the dash line (C) from the stock bins, through the bindery, and to the cutter in the northwest corner. After being cut to size for the presses, it was taken through the shipping department *21* to the elevator for delivery to pressrooms below. It is noticeable in this Before Arrangement that the majority of the bindery employees were confined to a relatively small area of the third floor which made for crowded conditions and an unpleasant working environment. The key for the equipment designated in the plant is printed below. Now compare what was done under careful planning by Gilman's production and mechanical executives and employees by examining the After Arrangement diagram on the opposite page.





AFTER ARRANGEMENT DIAGRAM of Bindery, Stock and Offset Pressroom at A. S. Gilman Plant in Cleveland with Workflow Lines.

Offset Pressroom

1.—Offset Pressroom Foreman's Desk
2.—22 in. by 30 in. Single Color Harris Offset Press
3.—35 in. by 45 in. Single Color Harris Offset Press
4.—Future Two-Color Offset Press
5.—Future Single-Color Offset Press

Bindery

6.—Seybold Paper Cutter
6A.—Chandler & Price Paper Cutter
6B.—Chandler & Price Paper Cutter
7.—28 in. by 44 in Cleveland Folder
8.—25 in. by 38 in. Cleveland Folder
9.—19 in. by 25 in. Cleveland Folder
10.—17 in. by 22 in. Baum Folder
11.—17 in. by 22 in. Chopper Folder
12.—38 in. by 50 in. Brown Folder
13.—28 in. by 44 in. Brown Folder
14.—Rosback Gang Stitcher
15.—Bostitch Hand Stitcher
16.—Perforator
17.—Punch
18.—Round Cornering Machine
19.—Paper Stock Bins
20.—Paper Stock Skid Storage
21.—Shipping Department
22.—Elevator
23.—Men's Toilet and Stairs
24.—Women's Toilet and Stairs
25.—Rest Room

The amplified working areas provide employees more pleasant conditions under which to work. Work movement through the bindery is smoother and more rapid with the straightening out of workflow lines. Provision has been made for future expansion of the offset department. The heavy workflow lines (A) designate the route taken for work coming off the elevator from the first and second floor letterpress pressrooms to the bindery. Work coming from the offset pressroom, shown by the light line (B), joins workflow (A) and becomes (A-B) as it moves through the bindery for processing. Workflow (A-B) proceeds straight from the bindery to the shipping department *21*. After being packed it is sent on its way to the customer via the elevator. A noticeable advantage is the non-interfering location of the paper cutter at *6A* in relation to the elevator when cutting stock for delivery to the letterpress pressrooms on floors below. Should paper coming from storage in the basement or on the sixth floor have to be cut, its movement on the third floor is limited to the short distance between the elevator *22* and the cutter *6A*. This workflow is indicated by dash lines (C) which also provides access to paper stock bins *19* near the cutter. The wide aisles on the third floor, made possible by revamping the arrangement of the machines, assure uninterrupted movement of materials and provide safety for employees. The key for the equipment designated in the plat is listed above.

of jobs that were being processed in the bindery and offset pressroom.

Improvement of departmental layout, workflow and production controls are three important factors which the modern production and mechanical executives utilize in managing a printing plant. Without exercising each of these factors judiciously, it has been found that production schedules lag and departmental costs increase. Workers' time is also wasted by consuming more production hours on operations which could be simplified.

Joint Executive Meeting

Several months ago an analysis of conditions present on the plant's third floor was made by Production Manager Tom Roberts in a meeting with Superintendent George Ebert, Bindery Foreman Joe Fazekas and Offset Pressroom Foreman Herb Johnson.

It was at this meeting that a decision was reached to correct the conditions prevailing on the third floor. The first move in this direction was making a plat, drawn to scale, of the third floor area. It included the present location of the equipment, posts, partitions, elevator, as well as movement of work in process and materials through the two departments.

(*Continued on Next Page*)

BEFORE—A view looking Southwest on the third floor of the A. S. Gilman, Inc., plant, Cleveland, before revamping the equipment layout. The area in the foreground was devoted to paper skid stock storage and the various hand operations performed in the bindery. The enclosed offset pressroom is shown in the background which presents the appearance of a department within a department. The partitions surrounding the offset department were erected for partial humidity control when the windows in the background were open. The elevator, so important to the workflow on this floor, is at the far right side of the room (not visible in this picture).

Existing Plat

Another plat was then drawn up to the same scale with the proposed changes in equipment layout as suggested by Roberts, Ebert, Johnson and Fazekas. It was in this first draft of the revised equipment layout that these executives attempted to correct the faults of the old arrangement.

Correcting Workflow Faults

Primary attention was given the offset pressroom which was so situated that expansion of its facilities was obstructed on all sides by stock storage and bindery machinery. The original location of the offset department resembled a plant within a plant which the group considered to be a poor idea in the first place for sound shop operation, even though the intention was to simulate an air-conditioned pressroom. It was decided to allow this department more room to accommodate additional presses which were planned for future installation. By moving the pressroom to the North end of the building and positioning the presses with the delivery end toward the windows, the pressmen were aided in keeping a more accurate check on color work.

The allotment of additional floor space for the offset pressroom required locating part of the paper storage on the sixth floor of the building. The stock bins formerly located along the East wall were torn down and moved upstairs. This permitted a consolidation of the bindery's various folding machines and a neat arrangement of equipment in the Southeast area of the room.

Before revamping the third floor workflow, employees trucked stock from the elevator, located approximately in the middle of the room's West wall, to one of the paper cutters on the North side. After being cut, it was brought back via the same route to the elevator for the letterpress pressrooms on the first and second floors.

This condition was corrected by relocating one of the cutters in the space immediately in front of the elevator which was made available by moving the offset pressroom. Stock bins were located near the cutter to facilitate movement and segregate this important bindery function. Should paper coming from storage in the basement or from the sixth floor by elevator have to be cut, its movement on the third floor is now limited to the short distance between the elevator and the cutter.

Stock bins for use by the offset pressroom formerly were situated near the entrance for convenience to the presses. It will be noticed in the After Arrangement of the third floor (see accompanying diagrams) that these various moves aided in correcting the faulty workflow which existed. Now work proceeds in a straight line from the elevator to the different bindery operations and straight back again to the shipping department along the same route through wide aisles provided for work in process.

The Revised Plat

Employees of the bindery and offset pressroom entered the picture in the next step of the changeover. The revised plat with the proposed changes was posted on the third floor bulletin board and called to the attention of the workers. It was explained that the revamped equipment layout was merely a proposed plan for correcting unsatisfactory conditions under which they were working. The foremen discussed with employees how such moves would benefit each individual and create more pleasant working surroundings.

Employee Participation

The workers were then called upon for their opinions and suggestions. After several days of studying the proposed arrangement posted on the bulletin board, many of the bindery employees and offset pressmen offered opinions and suggestions on improvement of the tentative floor plan. From this procedure, several employee suggestions were adopted and incorporated in the final layout of the third floor. In this manner, the employees felt they had actually shared in the planning.

Moving and Rearranging Equipment

The move, aside from the planning, consumed about six weeks. In order not to cause any interruption in production schedules in these departments, it was planned to execute the changeover during weekends. The final layout of the new floor plan (as shown in the diagram) was drawn to scale with ¼ in. equalling 2 ft. In this manner, both movers and electricians knew the exact location in which the equipment was to be moved beforehand and used the floor plan as a blueprint during the moving operation.

To give the reader an idea of the amount of machinery involved in the move, the equipment used in the bindery is listed here: Two Chandler & Price paper cutters, Seybold paper cutter, 28 in. by 44 in. Cleveland folder, 25 in. by 38 in. Cleveland folder, 19 in. by 25 in. Cleveland folder, 17 in. by 22 in. Baum folder, 17 in. by 22 in. company designed chopper folder, 14 in. by 11 in. Pitney-Bowes folder, 38 in. by 50 in. Brown folder, and 28 in. by 44 in. Brown folder. Also, a Rosback automatic gang stitcher, four Bostitch hand stitchers, perforator, punch, ATF paper drill, and company designed scoring machine and gathering machine.

The offset pressroom is equipped with two 22 in. by 30 in. single color Harris offset presses, and a 35 in. by 45 in. single color Harris press. Provisions were made in the revised floor layout for a new two-color offset press and another single color offset press. It is planned to install this equipment in the near future.

As can be seen in the Before and After layout diagrams of the third floor and in the accompanying illustrations, the offset pressroom is separated from the bindery by partitions. The purpose was to partially control the humidity on the third floor when the windows were opened by employees in the bindery in warmer weather. Future plans of the company call for the installation of humidity control apparatus in this department.

Aisles for Work Movement

Because aisles for work in process on the third floor run through open areas

without walls or equipment to designate their boundaries, a solution had to be found to keep them open for traffic at all times. A suggestion was adopted whereby the aisles are designated by 4 in. wide white lines painted on the floor itself. The areas between these white lines are kept clear of trucks, skids, boxes, etc. This plan has assured uninterrupted movement of materials and safety to employees.

Foremen Cooperate

An interesting side note in production operations at Gilman's is the manner in which the individual foremen function as representatives of the production scheduling and control department. Each departmental foreman checks with the foreman of the department he is to receive a job from for assurance that he will get the job on schedule and have adequate time to perform the operations called for. This also enables the foreman to check on the possibility of any unforeseen delay having occurred to interfere with the schedule for the job. By following such a procedure, according to Mr. Roberts, it has been found that customer delivery dates can be met on a more definite basis.

An example of the way in which such a plan functions can be found in the operation of the bindery. A copy of the job ticket accompanying each order through the plant is sent to the bindery as the order enters the composing room. All of the bindery operations are listed on the job ticket. Included is the date the job has been promised the customer.

If the bindery will receive the job from the letterpress pressroom, it is the practice of Foreman Fazekas to check with Pressroom Foreman Frank Shuttera. In this way he makes sure he will receive the job in time to enable his department to complete the bindery operations. A similar course of action is followed by the foremen in other departments to prevent jobs from becoming side-tracked or behind schedule.

Monthly Meetings

Another aid to the production picture at Gilman's is a monthly foreman's meeting held in the firm's conference room with Production Manager Roberts presiding. Such meetings were initiated for the purpose of discussing and ironing out any production problems faced in the previous month.

The foremen keep notes during the month concerning problems they were confronted with on certain jobs. These problems are then discussed at these meetings and an attempt is made to find solutions.

At these meetings the foremen "let their hair down" and speak frankly about any subject concerning production in the plant. The meetings are not imposed upon the foremen as a means for answering to the production department for not having met a delivery date, but are designed rather for a constructive discussion in striving for better plant operation. The production manager, as is each foreman, is just another representative of the Gilman concern at such meetings. Mr. Roberts estimates that approx. 90 per cent of the foremen's criticism is of a constructive nature.

Promised customer delivery dates are of utmost importance in the production set-up at Gilman's. It is the belief of the production executives that the greatest requisite to customer satisfaction is in handing over the finished job on the date specified in the order. Teamwork among the production and mechanical executives is continually pointed in this direction.

Controlling Delivery Dates

Despite this close cooperation, however, allowances have to be made for human error and mechanical failure as production moves through the departments. Should one of these unexpected delays occur while the job is in process, and the department head anticipates that the scheduled delivery date will not be met, the production department is notified immediately.

If the delay means a job will be held up for a day, the production department checks first with the departments which will receive the job next. The foremen are asked if they will be able to make up this one day's delay in their department. In many cases, several hours of the delay can be made up in one department and the balance in another. If, after careful investigation, it is found that the delivery date for the job will not be kept, the customer is notified of the unforeseen delay in the delivery of his order.

A Sound Investment

The changeover of the third floor layout together with adherence to the improved production practices has resulted in a better coordinated system of operation in the bindery and offset pressroom. Mr. Roberts confirmed this statement when he said: "It is estimated that spoiled work in the third floor departments has decreased 50% since the change."

The neater arrangement of the working area has provided employees more pleasant conditions under which to work. Work movement through the bindery is smoother and more rapid with the straightening out of workflow lines. Consolidation of the offset pressroom, as well as the bindery and shipping departments into compact units can be cited as another advantage to the revamped floor plan. It has also provided for future expansion of the offset department. Increased efficiency in these departments is evidence that the time, effort and expense devoted to the alteration was a sound investment on the part of the Gilman organization.

Lithographic Courses

The Washington Square Branch of New York University is repeating this fall the course in Lithographic Production and Sales taught by H. C. Latimer, Educational Director of the Lithographers National Assoc. The course is designed for those with some knowledge of printing production who wish to acquire specific information on the use of offset for advertising production. A course in Estimating for Offset Printing is also scheduled for the fall term. Details of these courses may be obtained by writing the Div. of General Education, 3 Washington Sq., New York, N. Y.

AFTER—View in bindery at A. S. Gilman, Inc., plant, Cleveland, looking South after relocation of equipment had been completed. Note the one pair of white lines painted on the floor indicating the aisle width which is kept clear to allow for uninterrupted movement of materials through the department. The Rosback Gang Stitcher is being operated in the foreground, while hand operations go on in the background. A more pleasant working environment is noticeable in this After Arrangement. All bindery operations are supervised by Foreman Joe Fazekas (standing second from right). The perforating and paper drilling machines are at the right, and the various folding machine in the upper center section in this picture.

SUMMARY

(The elements of static electricity are reviewed briefly, and the mechanisms of static generation and methods of static elimination are explained. It is shown that static charges on paper can be generated in two ways: (1) by contact electrification, and (2) by induction. Elimination of static in paper can be accomplished only if electrical conductivity is established, either in the paper or in the air near the paper. Air is an insulator and must be ionized to become electrically conductive. Paper is an insulator when dry, but can be made conductive by absorbing moisture, such as by storage in a humid room. The role of relative humidity in static elimination, and the various methods of eliminating static by the ionization of air are discussed.)

Static Electricity in Printing

By LEWIS E. WALKUP*

*Battelle Memorial Institute, Columbus, O. Paper presented at a meeting of the Technical Association of The Lithographic Industry, Columbus, O., May 8, 1951. TALI is now known as the Technical Association of the Graphic Arts Industry. It is now an industry-wide technical association.

Nature of Static Electricity

BASICALLY, static electricity is no different from the electricity which turns motors or lights lamps. It, like all other forms of electricity, is merely a convenient name given to the slight excesses or deficits of electrons or protons in a particular element of space. Normally, it is the electrons and not the protons which move about in matter, so the problems of electricity are mainly the problems of the presence and the motion of minor percentage excesses or deficits of electrons.

Some manifestations of electricity are termed "static" only because, in them, one is more interested in the presence or absence of the excesses and deficits of electrons than he is in the motion of electrons from one place to another. On the other hand, most practical applications of electricity depend entirely on the motion of electrons or electrical currents. It may be noted that the quantities of electricity involved in troubles with static electricity in the pressroom are exceedingly small compared with the quantities of electricity flowing through ordinary 115 v. circuits. For example, to light a 115 v., 100 w. bulb for 1 sec. would require all of the electrical charge involved in about 1,000,000 sheets of writing paper, each having enough electrical charge to make it quite troublesome to handle in a printing operation. Also of interest is the fact that only a very small percentage of the total number of electrons present in a body are involved in ordinary manifestations of static electricity. For example, in the illustration just used, while it required the surplus electrons from 1,000,000 sheets of statically charged paper to light a 100 w. bulb for one second, the total number of electrons present in *one* sheet of such paper would light the same bulb for two hours, if they could all be released for electrical currents.

In many phenomena associated with both current and static electricity, the excesses, deficits, or flow of electrons occur in solid objects. For this reason it is important to understand approximately how electrons reside on or in solids, and how they flow through or over solids. The electrons making up the atomic structure of a solid are more or less tightly bound to its rigid structure, and the tightness of this binding determines whether the material is an insulator or a conductor of electricity. In common metals, some electrons are almost perfectly free to move about, and the material is a good conductor of electricity. In the realm of static electricity, this means that it would be impossible to build up, on one part of a metal object, an excess of electrons over that occurring on other portions of the same object. In some other solids, practically no electrons are free to move about; these materials are said to be insulators of electricity. In reality, no materials are perfect insulators but some, like polystyrene, are nearly perfect.

This dividing of materials into conductors and insulators is satisfactory for most considerations of electricity. However, it is not satisfactory for considerations of static electricity. For that, it is necessary to look into more subtle gradations of electrical conductivity, and to take into account materials, like paper, which are in a class somewhere between conductors and insulators. In terms of ordinary considerations of electricity, paper would be an insulator, but in terms of static electricity, paper may be a very conductor, depending principally on the amount of moisture present in the paper.

Generation of Static Electricity

To the uncritical observer, static electricity appears to be generated only under rather specialized conditions which occur rarely. Actually, static electricity is generated every time any solid object makes and breaks contact with any other solid. Liquids might have been included in the above statement but they are of little concern to the printer. These charges of static electricity are not normally detected because, under usual conditions, most materials conduct well enough that the charges flow away almost instantly.

Static electricity can be generated in two ways, by contact electrification or by induction electrification.

Contact Electrification

Contact electrification or triboelectrification are the names given to the common phenomenon of the generation of an electrical charge on contact or as a result of friction. Such generation is observed very commonly during winter weather and probably accounts for the vast majority, although not all, of the cases of static generation in the printing industry. When any two materials touch, electrons are exchanged between them. It may be assumed that, before the contact, both of the objects were electrically neutral; that is, each object contained an equal number of positive charges, protons, and negative charges, electrons. However, during the contact, electrons will flow from one object to the other. The exact nature of the electrical potential causing this flow is obscure and probably differs in individual cases. In some cases, it is probably electrolytic, like the action of an electrical battery. In other cases it may be piezoelectric, depending on the deformation of the objects on contact, or it may be thermoelectric. If none of these relatively understood causes are present, the voltage required to create the unbalance of electrons between the two objects can be produced by contact potentials. It is a fact, observed experimentally, that when any two electrically conductive materials, for example, metals, are brought into contact,

FALLS SHORT

(Abstracted from address *The Grapvine Hangs the Foreman*, delivered before the ANPA Mechanical Conference, Chicago, Edgewater Beach Hotel, June 1951, by Robert H. Spahn, Personnel Director, Oklahoma Pub. Co., Oklahoma City, Okla.)

"COMMUNICATIONS" is not a new word, but it has taken on a special meaning. It was hardly mentioned before the war except perhaps as it applied to the mechanics or media, but now that is all we hear at conventions and business gatherings. The business or plant executive of today has at his disposal a multitude of media for the communication or transmission of his ideas. House organs, letters from the president, bulletin board services, memorandums, public address systems, films and newspapers are used in an attempt to inform the worker—but none of these media will inform the plant executive about what his men are thinking and the reactions they have toward a particular order.

there is established between them an electrical potential which may amount to a few thousandths of a volt or several volts, depending on the nature of the two materials. Contact potentials can be "explained" by some considerations of modern theory of the solid state, but for the most part, they must merely be accepted as a basic fact of nature. It is probable that similar contact potentials exist between insulators, but the effect has not been so extensively studied in insulators as in metals.

These minute electrical potentials created by several mechanisms must be magnified many thousands of times before they will be equal to the tens of thousands or hundreds of thousands of volts observed in practical cases of static. This magnification is brought about by a simple change in the electrical capacity involved. When two objects are in contact, their atomic structures are separated by distances of the order of a hundredth of a millionth of an inch. The region of contact between the two objects can be thought of as an electrical condenser having a plate area equal to the area of contact between the two objects, and a plate spacing equal to this very minute separation of the two objects. The contact potential acting between the two objects, whatever its origin, can be thought of as a battery charging this electrical condenser. Now, as the two objects are separated, the gap between them increases, and the capacity of the equivalent electrical condenser decreases in direct proportion.

The potential between the two objects was originally determined by the contact potential between them. However, separating the objects is equivalent to disconnecting the battery from the condenser. After this, the potential of the objects depends on the expression relating the potential, charge, and capacity of a condenser; that is, voltage equals charge divided by capacity. By this process, two objects in contact, having a contact potential between them of one-thousandth of a volt, might have their difference in potential increased to 100,000 v. if their contact separation was increased to one inch. Applied alone, this type of calculation would predict larger potentials than are found in nature. Actually, such considerations apply reasonably well only to the contact and separation of insulators.

If the two materials used in the above illustration had been conductors of electricity, for example, metals, then the spacing between them could have been increased, probably thousands of times, over the molecular separation during bodily contact, before the last point contact between them was destroyed. Up to this point, there could be no increase in potential because electricity would have been free to flow from one piece of metal to the other. No such neutralizing effect is present in electrical insulators, and the full multiplying effect of the increase in spacing is present and effective.

Even in insulators, the potential which can be generated between objects is limited by the potential differences which the air will sustain. This amounts very roughly to 30,000 v. per cm.

In the above explanation, nothing was said about friction, in spite of the fact that this effect is sometimes called frictional electrification. It appears that friction is not at all necessary for the generation of static charges. Friction might, however, increase the amount of static generated by increasing the number of points of contact between the two objects.

Which of two objects will acquire a positive and which a negative electrical charge on contact depends on obscure and subtle surface conditions, as well as on their basic compositions. Samples of materials can be arranged in a contact-electrification, or triboelectric, series by touching each sample to all of the other samples and noting those from which it acquires a positive electrical charge. When such a series is properly arranged, each sample will acquire a positive charge when touched to any material beneath it in the series; it will acquire a negative charge when touched to any material above it in the series.

Theoretically, it is possible to avoid the generation of static by working only with materials close to one another in the triboelectric series. This is not usually a practical solution because, to be really identical in this respect, the surfaces of two objects must be identical in composition and in the contamination they have accumulated and the deformations which they have undergone. It is simple to demonstrate the generation of static charges by rubbing together almost any two objects which are supposed to be identical. Triboelectric series are actually of little practical importance in eliminating static because of the difficulty of preparing them, and because the solutions to the problems which they usually suggest are not practical.

Induction Electrification

Induction electrification may not be so prevalent in printing presses as is contact electrification. However, it may occur at times and it may serve to add to the electrical charges already present on paper.

The principles of induction electrification can best be explained by describing how they would work in charging a web of paper as the web passes over a metal roll. In any case of induction electrification, the object being charged must conduct electricity slightly.

Suppose the paper web is pulled tightly against the roll and that a metal plate, mounted a few inches above the paper, is at an electrical potential of several thousand volts positive. The electrode will create an electrical field between itself and the grounded roll under the paper. This field will urge electrons out of the metal roll and into the paper. Because of the slight conductivity usually present, some electrons will actually flow into the paper. Now, if the paper moves away from the grounded roll while it is still under the influence of the electrical field, the electrons which flowed into it will be trapped, and the paper will have acquired a net negative charge. The electrode introduced artificially in this example might, in a press, be a piece of electrical equipment which has been carelessly grounded or shielded or it might be another web of paper. It might even be an electrical charge on the opposite side of the paper web itself.

Induction electrification is involved in classic electrophorus, in the Wimshurst and Toppler-Hoytz static generators, and it is used to produce electrically charged droplets by placing an atomizer nozzle in an electrical field. Induction electrification appears to have been given very little attention in printing.

Elimination of Static Electricity

Static electricity is generated every time paper is brought into contact with any other solid object. Fortunately, it is eliminated automatically in most cases by the normal electrical conductivity of

(*Continued on Page 88*)

Whiskered Route

(Abstracted from an address *Personnel and Productivity* delivered before the 1951 ANPA Mechanical Conference at Chicago by Dr. Robert K. Burns, University of Chicago.)

IMPROVEMENT of leadership, he said, is one of the most important things that must be done in American industry. Most foremen come up by what Dr. Burns called the "whiskered route." They were on the job the longest, were available when the job was open, and were the best craftsmen. But, he added, they lack leadership training. He said such training will pay off in productivity.

The Reason Why

(Ben Granger, General Manager, St. Petersburg Printing Co., Inc., St. Petersburg, Fla., has prepared the following explanation on printing costs in a direct mail piece for distribution among the company's customers.)

THE reason why there is such a wide variation in printing prices can be enumerated as follows: Inks cost from 75c to $5 per lb.; paper costs from 15c to 75c per lb.; workmen are paid $1 to $2.60 per hr. Other commodities have a wide range of prices—all of which are based on quality. Shoes can be bought at prices from $5 to $20 per pair; a suit of clothes may cost from $25 to $150. Some printing plants do work of low quality. Some do a medium grade of work. Others do the better class of printing. The price depends on the quality of the printing. Which class of printing will best serve your needs?

Chrome Plating

For gravure cylinders produced to extremely close tolerances — Rate of deposit determinable within 0.00005 in.—Evenness of deposit a matter of engineering

By RICHARD J. DUNNE*

**The Cro-Plate Co., Inc., Hartford, Conn.*

THE interest with which a printing plant superintendent inquires into the possibility of chrome plating printing surfaces has been stimulated by today's competitive market. Rising costs exert constant pressure for new methods of reducing costs. At the same time the buyers of printing, despite their watchfulness of costs, are constantly checking quality.

An example of this watchfulness was demonstrated at the 1950 convention of the Gravure Technical Assoc. E. Thomas McBreen of the J. Walter Thompson Co., produced an exhibit of two-color rotogravure proofs. These were in series: Proofs from the printers, proofs from the papers, and tear sheets from the checking bureau. Advertisements produced from the same set of positives showed variations in color not only in supplements produced in different plants but in supplements produced in the same plant —and none of the check bureau tear sheets were in register. Obviously, the printing buyer is critical, which indicates that production economies must go hand in hand with improvement in quality.

Competition has spurred the lithographic branch of the industry along just these lines. Their activity has been in improving fidelity of reproduction—to make their product acceptable to the letterpress buyers. The technical developments in lithography have been predominately in the field of chemistry, specifically the improvement of platemaking. The lithographers' progress has not gone unnoticed by the other principal branches of the printing industry.

Letterpress, except for current experiments in lower-cost halftone making, has reached a period where processes are stabilized. Costs are being reduced by attention to plant management and by perfection of existing processes.

Gravure processes, however, are comparatively new, being developments of the present century, yet even they are not undergoing basic changes. Yet there is considerable activity in printing plants and among machine builders in working out more efficient applications of these processes. For this reason, gravure printers are currently showing an interest in a new process of chrome plating of their printing cylinders developed by the Cro-Plate Co.

The idea of a longer-wearing printing surface was first exploited in the letterpress field. Electrotypers are responsible for the term, steel-faced electros, and today nickel plating of both electros and stereotypes is common. For longer runs, electrotypers and stereotypers have taken advantage of the greater durability found with a chromed surface. One experiment using the same paper (whose condition has an important bearing on the life of the printing surface) showed that where a nickel facing held up for 600 thousand impressions, a chrome plated electro ran for 1.5 million impressions. Electrotypers were able to achieve satisfactory results with plating methods similar to those used for automobile bumpers and other decorative articles, for any unevenness in the coating could be compensated for by modern makeready methods.

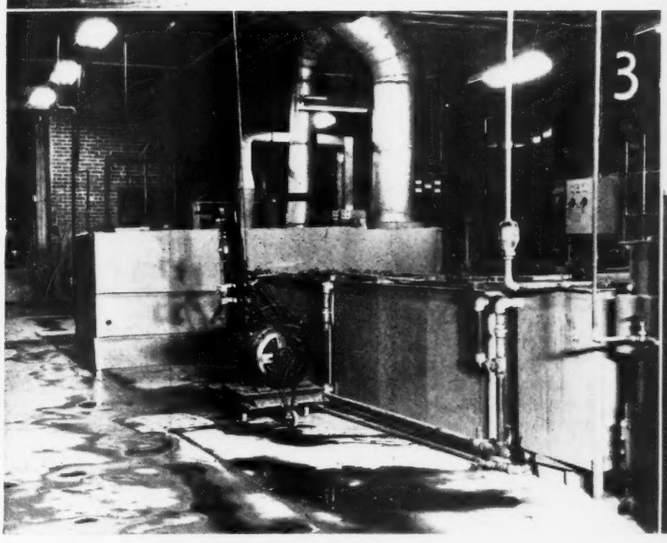
St. Louis Showroom—Shown above is the new St. Louis showroom of Gane Bros. & Lane which, in addition to new office quarters, were formally opened recently. Among those on hand for the open house were J. C. Patterson and F. C. Roosevelt, F. P. Rosback Co.; Paul Babcock, Challenge Machinery Co.; Fred Balch, Schuylkill Paper Co.; H. A. Payne, Payne-Jones, Inc.; John Dodd, sr. and jr., Davey Company; and Roy Raetsch, Moly-Chrom Knife Co.

Chrome Problem in Gravure

But the problem of chrome plating is not so simple for the gravure people. Printing cylinders must be kept concentric at all points to tolerances measured to the ten-thousandths of an inch. In color work the same close tolerances must be maintained in the diameter measurements of all cylinders. Because of the tolerance problem, chrome plating was not hearly so appealing to practical pressroom superintendents as it was to scientific men knowing the abrasion resistant properties of chrome. Yet as it happened, it was the interest of the gravure people that led to the development of methods by which chrome could be precision-plated. Theodore L. Brantly, jr., President of the Cro-Plate Company is the son of an executive at Crowell-Collier Publishing Co., a pioneer in gravure printing and with the blessing of Thomas Beck, Chairman of the Board, fathered the necessary research.

There are good reasons why precision-plating methods for chrome have been developed but recently. The first widespread use of this metal in plating was to prevent oxidation. The manufacturers of nickel-plated bathroom fixtures, door knobs, automobile bumpers and decorative trim were all bothered by the tarnished appearance of their products after short use. A plating of abrasion-resistant chrome over the nickel would preserve luster. The methods developed were for the mass-production of decorative articles and solely for the sake of appearance.

Chrome is a metal whose characteristics presented difficulties to the plater. Most readers can appreciate the problems by making a comparison with copper plating. You probably remember high school experiments when you dropped a common nail in a beaker with a copper anode, and watched the copper deposit evenly. Not so with chrome. This metal is slow in depositing, and it piles up on the spot nearest the anode. Probably chrome plating would have remained in the decorative field had not engineers become interested in using chrome as a surface to prolong the life of machinists' tools and moving machine parts. They used the existing plating methods, overplating to make certain of sufficient coverage at all points, then ground or lapped the tool to final size.



For the Gravure Industry, The Cro-Plate Co., Inc., Plates Printing Cylinders to Extremely Close Tolerances

1.—The Cro-Plate plant in Hartford, Conn.

2.—Foreman John Ermakovich and Cro-Plate founders (left to right) Alan W. Brown and Theodore L. Brantly, jr., discuss work project.

3.—A section of the plating Department at the Cro-Plate plant—said to be one of the most complete industrial hard chrome plating installations in the New England area of the United States.

4.—Cro-Plate's well equipped laboratory for the periodic analysis of plating solutions and continuing research for the development of new processes.

Requirements for Plating

With a latent demand created for the precision plating of chrome, Theodore L. Brantly, jr. commenced perfecting a new plating method suggested by the earlier experiments at Crowell-Collier. With his brother-in-law, Alan W. Brown, he founded the Cro-Plate Company in 1946. Much of the activity of this company is concerned with research and engineering. Initial research developed plating solutions by use of which chrome could be deposited 8 to 10 times more quickly than older methods. In practice, a solution is compounded based on the type of metal being plated and its characteristics. The temperature of the solution, the time period and the voltage must be separately regulated. With all these variables under control it is possible to determine the *rate of deposit* within 0.00005 in. But the *evenness of deposit* is a matter of engineering. The anode must conform closely in shape to the piece of metal being plated. This requires extensive machine shop work in developing proper fixtures. But after this tooling up period, which corresponds to a pressman's makeready time, Cro-Plate is able to embark on a production run at substantially reduced costs—because of the very short time cycle and because subsequent operations for bringing the piece to size are eliminated.

For the plating of gravure cylinders Cro-Plate has fixtures developed for the different diameters and lengths, so that cylinders received individually can be plated by production methods at reasonable costs.

Characteristics of Metal

The characteristics of this new method of precision-plating chrome can be illustrated by comparing the plating of machine shop tools with the plating of a gravure roll. Consider a threading tap, which has purposely been produced a few ten-thousands under size. The Cro-Plate method brings it to accurate, final size—subsequent grinding and honing are both eliminated. But in this case the metal beneath the plating is steel, case hardened. All stresses and strains are transmitted to the steel, which is designed to absorb the stresses, while the sole function of the plating is to increase surface durability. In the same manner the plating on a gravure cylinder serves to increase surface durability. Here, however, the metal beneath the plating—the copper—is soft. Pressures are limited to those that can be withstood by copper. A careless blow will dent the surface of a chrome plated cylinder, yet the chrome will resist most ordinary causes of scratches.

Another illustrative comparison can be made with a gear wheel. The action of gears produces unusual friction, as does the doctor blade fixed against a printing cylinder. Chrome plating is the answer for both because this metal possesses,

(*Continued on Page 90*)

Equipment & Supplies

If you wish additional information concerning equipment, supplies and/or technical literature, please make your request to PRINTING EQUIPMENT *Engineer*, 1276 West Third St., Cleveland 13, Ohio.

When writing to us about any of the items described, and to save your time, just mention in your request the PEE symbol which appears at the end of each description.

Miehle Offset Press

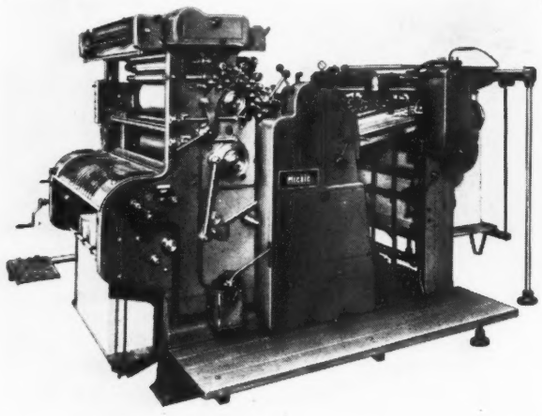
THE recently introduced Miehle 29 Offset Press will handle a max. sheet of 23 in. by 29 in. at reported speeds up to 7000 i.p.h. According to Carlton Mellick, Vice President in Charge of Sales. The new offset press will be manufactured to Miehle's specifications by Faber & Schleicher of Offenbacham-Main, Germany.

The feeder, sponsor states, is designed for stream feeding a wide range of stocks, One adjustment is required for a change in sheet size. Except for the trip caliper, no changes are required for stock thickness. The pile will accommodate about 8000 sheets of average stock.

The combination of a pull type side guide and the sheet transfer mechanism, or swing grippers, are used for registering the sheet. The sheet transfer mechanism takes the sheet at rest and accelerates it to cylinder speed.

Ink distribution and coverage of the 23 in. by 29 in. printing area are effected by four form rollers of two different diameters. Knurled keys and a drop blade are included in the fountain design.

Suction wheels help control the tail of the sheet as the chain delivery deposits the sheet on the pile. Sponsor states the jogging mechanism will handle a range of stock from onion skin to cardboard. Inspection sheets can be removed while the press is running. Additional information concerning the press will be furnished by mentioning PEE No. 123 in your request.



Operator's side of the Miehle 29 Offset Press which is designed to handle a max. sheet of 23 in. by 29 in., at reported speeds up to 7000 i.p.h. The press will be introduced to the Graphic Arts industry at a series of demonstrations to be held throughout the country.

Miehle Press Installations

The Miehle Printing Press & Mfg. Co. announces the following recent offset printing press installations: No. 61 T.C. Offset—F. N. Burt Co., Buffalo, N. Y.; Dependable Printing Co., New York, N. Y.; Gamse Lithograph Co., Baltimore, Md. No. 76 4-C Offset—Brett Lithographing Co., Long Island City, N. Y. No. 61 S.C. Offset—McCandlish Lithograph Corp., Philadelphia; E. F. Schmidt Co., Milwaukee, Wis.

Working Height Lifter

LEWIS-SHEPARD Products Inc., states its Working Height Lifter is designed to facilitate the transfer of stock in hand lifts from one pile to another. This positioning equipment keeps the work at convenient working height thus eliminating unnecessary lost time and reducing operator fatigue and danger of injury. Lifting, stooping and lowering of the load are controlled by remote pedal switches which can be located as desired since they are mounted on a single steel plate at the end of a 15 ft. rubber electrical cord.

The Lifting and Lowering mechanism consists of a ⅓ h.p. 115 v., 60 cy., a.c. motor connected to a piston pump which delivers oil under pressure to the hydraulic lifting ram. The ram itself is fitted with a chrome plated plunger, replaceable bronze guides, spring loaded packing and a flow regulator valve to control lowering of the platform at a safe speed under all load conditions.

The Working Height Lifter is made in 4000 lbs. capacity; 42 in. lifting height, 72 in. overall height. Platform lengths are 36 in., 42 in., 48 in. and 54 in. Platform widths are 32 in. or 38 in. (inside dimensions).

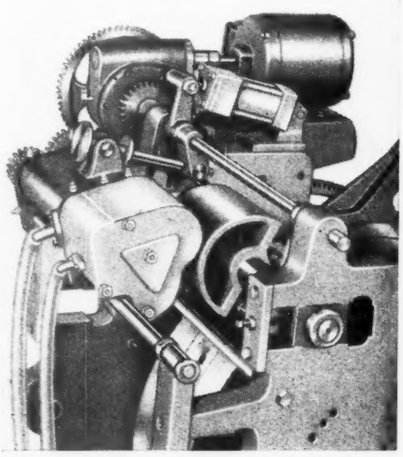
The pan type platform lowers to the floor so that unit loads on skid platforms or pallets can be placed on the Lifter by means of a lift truck. The pan platform can also be locked at various heights so that a Lift Truck can move the entire Lifter to a new location. The Working Height Lifter sits on the floor and can be plugged into almost any light socket.

There are many applications for the new Working Height Lifter where unit loads must be handled into and out of processing machinery. Probably the most common use is in the paper industry. Two Lifters can be used in some instances for each processing machine. The first Lifter keeps the work to be processed at convenient height and the second Lifter is lowered periodically as the processed material piles up.

Please mention PEE No. 134 when asking further information about the Working Height Lifter.

Weber Paste Applicator

THE Weber paste applicator is for use on any machinery where adhesive application is required by rollers. H. G. Weber & Co., Inc., states it maintains a constant flow of paste to the applicator roller by a pumping arrangement. The Weber paste applicator may be used with modifications on carton and envelope machinery, gluers and labelers. Its principal may be applied to most adhesive pot applications with modifications to fit them.



Component parts of the Weber Paste Applicator are shown in this illustration. May be used on carton and envelope machinery, gluers and labelers and other applications.

The entire paste application unit and pump arrangement is coupled directly to the machine by a gear drive. The applicator transfers viscous or semi-liquid adhesives by a plunger type pump, located in a container, to a small reservoir mounted on the machine in which the application roller rotates to pick up the paste for distribution to a pick off roll (or sector) that transfers the adhesive from the applicator roll to the paper bag bottom or other material to which the adhesive is to be applied. After an even distribution is made, excess adhesive pumped to the reservoir on the machine is returned to the pump and container to be used over again.

Should the machine be shut down for a brief period, an automatic arrangement circulates the adhesive from the pump through the applicator reservoir

to prevent paste drying on the roll and to eliminate any paste lumping. Upon resumption of operations the application unit is restored automatically to its original position.

When requesting further information, please mention PEE No. 133.

One-Time Carbon Selector

A CONDENSED set of charts developed by the American Carbon Paper Corp. for its Tara one-time carbon paper is available. It enables printers and offset-lighographers to determine which sheet is best suited for various sizes and types of forms. Shown are the stock number and weight designed for varying numbers of simultaneous copies. Other columns list the sheets recommended for sharp legibility on manual and electric typewriters and on automatic machines such as Addressographs and tabulators. A second chart illustrates the Clean Edge stock designs which, according to the manufacturer, meet 98% of one-time carbon requirements. The Tara E-Z Selector, with samples and data, is available to printers and lithographers on request. Please mention PEE No. 135 in your request.

Wood Press Installation

A 96-page capacity, six unit wood Newspaper Machinery Corp. press is now in operation at the plant of the Providence (R. I.) *Journal*. The press is equipped with General Electric electronic control and drive. The installation is part of the paper's modernization program.

In the new straight line press with double folder provision is made for various combinations. A feature of the press is the automatic pneumatic tension control on the running web as it passes through each unit to the folder to reduce the possibility of web breaks to a minimum.

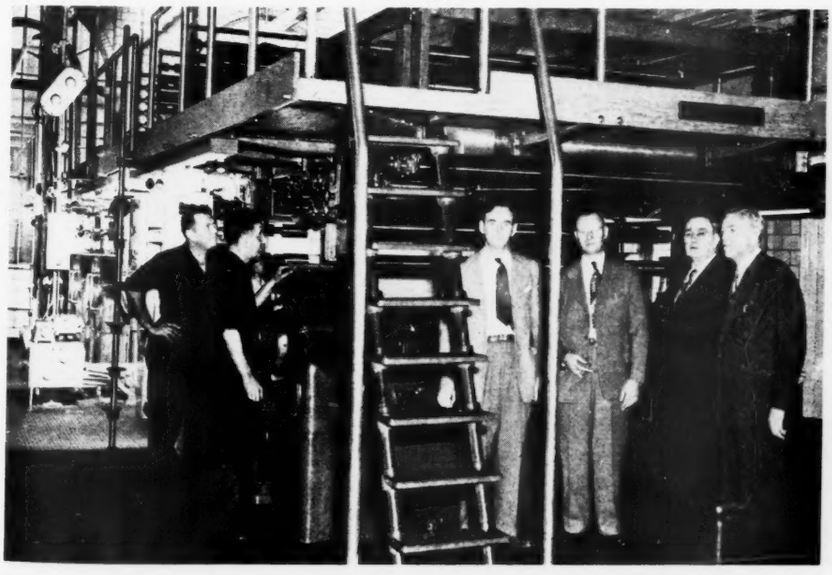
Electrically operated Detectors control cutters which sever the paper and stop the press when a web break occurs to prevent the torn web winding around the cylinders.

The press, it is said, is geared to produce up to 45 thousand papers per hour.

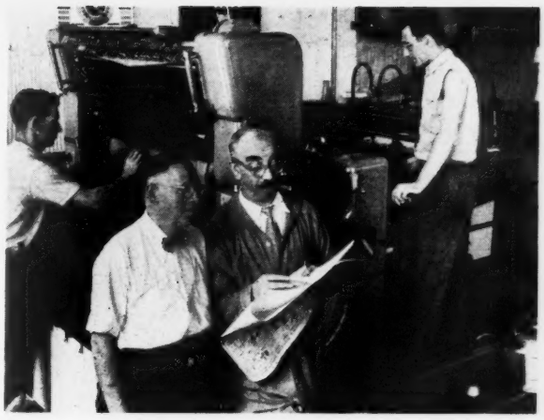
Individual pumps on each unit provide forcefeed lubrication. Driving power is furnished by 30 h.p. motors for each unit cooled and ventilated by forced air. The wood Autoclamp lockup automatically locks page plates to press cylinders. The press is equipped with an improved type continuous-feed inking arrangement.

A press control room has been constructed on the mezzanine level which houses the main breaker, speed control, rectifying unit and panel.

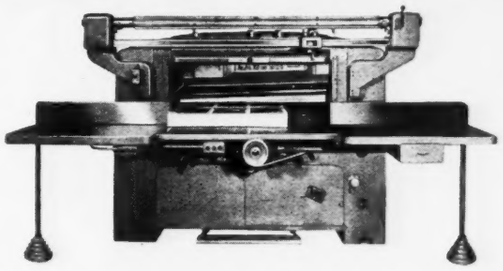
Provision in floor space has also been made for the addition of more press units or the replacement of present equipment.



Wood press ready to roll at plant of Providence (R.I.) *Journal*. Present as first run starts, left to right, were: Walter Hurst and George Santonastaso, Wood installation experts; George Green, *Journal* Production Mgr.; Arthur Munson, Wood Chief Engineer; Charles Schneckloth, Wood Supervisor, and Charles Noonan, *Journal* Pressroom Supt.



Circle Installs E.B.Co. Press—As part of its modernization program, Circle Press, New York, recently installed an E.B.Co. 22 in. by 34 in. Single Color Offset Press. Shown examining a sheet just off the new press are I. Reison (left), President, and A. B. Comroe, Plant Supt., of the Circle Press. Pressman Frank Ciavarilla is watching the feeder while Warren H. Southwood stands at the delivery end of the press.



Cutter Installation—The Providence Lithograph Co., Providence, R. I., recently installed a 52 in. Lawson Electronic Spacer Cutter. Sheets up to 76 in. length can be cut on this equipment. This is accomplished by lengthening the spacer bar and extending the back gauge to permit running back to 76 in. The cutter is equipped with hydraulically operated clamp and electronic spacer control and manufacturer states operates at 43 strokes per min.

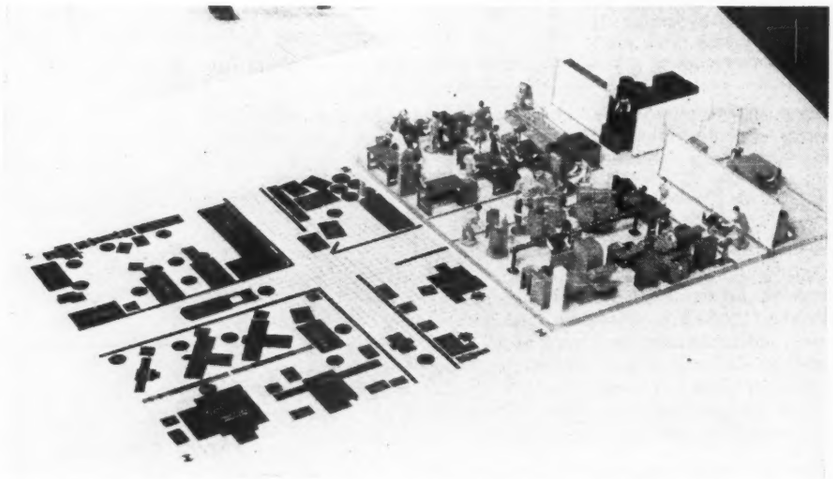
TO PREVENT INK CAN LIDS FROM STICKING

THE printer who has experienced trouble with lids of ink cans sticking, will welcome the remedy for this trouble utilized by L. F. McQuitty, owner of McQuitty, Quick Printers, Columbia, Mo.

Mr. McQuitty takes the lid just removed from a can of ink and with some vaseline on his finger, runs the finger around the inside of the lid on the part that fits down over the can. He also runs his finger around the outside of the can at the top so that both the can itself and the lid where they come in contact have a thin coating of vaseline.

With this simple treatment the lid may be replaced and removed without trouble. The vaseline also acts as a seal and helps to keep the ink in its original condition.

Color Retouching Table—The Color Retouching Table announced by Consolidated Photo Engravers & Lithographers Equipment Co. is equipped with a curved reflector that forms the back of the table unit. The curve of the deflector provides reflection of the light sources across the work table surface. The work table is faced with polished plate glass and a diffusing surface of white translucent material is located underneath the glass. Cold Cathode Light tubes are used as a light source. Sponsor states that these lights give correct illumination for true color viewing and remain cold no matter how long they are on. A Powerstat unit permits increasing or decreasing light intensity as desired. Other features of the table include a movable stand for holding standard Kadachromes, an adjustable copyholder, and three drawers in a desk type assembly. Please mention PEE No. 155 when requesting additional information.



Reproduces Dimensional Layouts—Visual Planning Equipment Co., Inc., has developed a method for securing blueprints or Ozalid prints directly from three-dimensional layouts. A photographic film templet, coated with pressure-sensitive cement, is used to match each piece in the model layout. Once the layout is complete, the Visual Photo-Repro-Templets, affixed to a film grid sheet, become the master from which as many prints as needed may be secured. Additional information may be obtained by mentioning PEE No. 156 in your request.

European Tour Report

Upon his return from an extensive European tour, David W. Schulkind, President of E. P. Lawson Co., summed up his impressions with a warning to the Graphic Arts industry that European competition in the United States is a factor to be reckoned with in the very near future. Besides visits to printing, lithographic and bindery plants in England, France, Western Germany and Switzerland, the trip coincided with the British Industry Fair and the German Graphic Arts Equipment Exhibit held at Duesseldorf. Included were visits to key equipment manufacturing plants. In many cases, Schulkind observed, printers and lithographers abroad indicated that they were making plans to enter the American market to secure orders for printing. He also pointed out that the advantage we enjoyed due to tariff protection have been dissipated by the recent lowering of tariff barriers and by the constantly increasing costs of American production.

Names C & P Press

Named in *U. S. Industrial Design for 1951*, annual publication of the Society of Industrial Designers, as an example of design achievement during the year 1950, is the Chandler & Price Cylinder Press. The design was developed by Viktor Schreckengost in collaboration with the C & P engineering staff. The design improvement in the press is a streamlined heavy-gauge steel housing which provides access to the working parts and protection to the moving parts.

Please take a look at your address on the wrapper in which *Printing Equipment Engineer* is sent to you at your place of employment. If it isn't correct, please tell us about it on a postcard.

Safe Removal of Steel Strapping

By LILLIAN STEMP

A SAFETY device designed to guard against injury when cutting steel strapping from around skid stock has been developed through the combined efforts of six shipping department employees of Western Printing and Lithographing Co., Racine, Wis. The device replaces the old method of bracing the shoulder against the strapping or placing a hand on the strap while cutting with wire cutters.

Safety device used in the shipping department of Western Printing and Lithographing Co., Racine, Wis., for safe removal of steel strapping from skid stock. The device prevents the strapping from flying into the operator's face after the strap has been cut.

The device consists of an L-shaped piece of sheet metal, (can be 16 ga. or lighter steel) 6 in. wide, with a handle riveted on the 12 in. length section. The top extension measures 7 in. long. In use, the device is placed over the steel strapping and held by the handle with one hand, leaving the other hand free to manipulate the wire cutters (as shown in the illustration).

Should the steel strapping spring up after being cut, the device acts as a guard in controlling the strapping to one side and away from the operator's face. Additional safety precautions recommended by the National Safety Council for safe removal of steel strapping, include the wearing of gloves and safety eyewear.

Technical Bulletins Gratis for Asking

Composing

Teletypesetter Operation

IN answer to questions by newspaper publishers and production executives about applying the Teletypesetter to Linotype operations, Mergenthaler Linotype Co. has published a 44 page booklet which explains in detail the tape-method of setting type. Entitled *The Linotype Handbook for teletypesetter Operation*, the booklet cites the advantages, limitations, requirements, and potentialities of teletypesetter over manual operation. It contains illustrations of the equipment involved in this method of operation, as well as diagrams of the various set-ups for Teletypesetter circuit operation.

Using the reported rate of 200 lines per hr. on manually operated general-purpose Linotypes as a base, the handbook points out: eight general-purpose Linotypes, manually operated, would be required to equal the production of four general-purpose Linotypes with Teletypesetter; nine general-purpose Linotypes, manually operated, would be required to equal the production of three Comet Linotypes Teletypesetter equipped; three Comet Linotypes, with Teletypesetter, equal the production of four general-purpose Linotypes, with Teletypesetter.

Teletypesetter operation, the handbook shows, is flexible to the requirements of the book and periodical printing field, and with the use of the Multiface Perforator, any normal roman type face up to 14 pt. can be composed by Teletypesetter tape. Copies of this booklet may be obtained by mentioning PEE No. 122 in your request.

Teletypesetter Faces

SPECIMENS of more than two dozen Linotype faces specially designed for Teletypesetter operation, in sizes ranging from 5½ pt. to 11 pt., are shown in a 16 page booklet prepared by the Mergenthaler Linotype Co. Entitled *Linotype Teletypesetter Faces*, the booklet contains three-line specimens of the various sizes shown according to set classifications. Full-column showings, each with various leadings, are also included.

In the introduction is explained the basis for determining set, and the system used to divide the set into 11 different unit groups which control the design of every character in each Teletypesetter face. Briefly, the em quad, of a given set, is divided into 18 equal parts, then multiples of the ⅛ division determine the eleven different unit groups which comprise the alphabet. For example, the narrowest unit (the i, comma, period, etc.) is 6 units wide; the widest is the em, 18 units, which is also used as the width for the W.

The special Linotype Teletypesetter faces available and shown include Ionic No. 5, Excelsior, Corona, and Paragon, with different bold and italic faces in the auxiliary positions on the matrices. The booklet includes two keyboard diagrams, for standard 90-channel layouts, which are recommended for Teletypesetter operation. Copies of this booklet are available by mentioning PEE No. 121 in your request.

Vandercook Pre-Press Equipment

In this 28 page well illustrated 8½ in. by 11 in. catalog are described the different proof presses and pre-press equipments manufactured by Vandercook & Sons, Inc. There are presses for photoengravers, and offset and gravure platemakers, as well as proof press equipment for run-of-mine work, reproduction proofs, and for pre-press equipment for preparing letterpress form elements to precise dimension, as well as power test presses for cylinder production press forms; described also are photoengravers color proof presses and a power offset proof press; the variety is extensive and includes power proof presses for newspaper and publication work. The description of each equipment item is particularly complete since the manufacturer gives in addition to machine specifications the standard and optional equipment. Magnesium test blocks for production presses and block levelers and plate, type and slug gauges are illustrated and described. Please mention PEE No. 142 when requesting a copy of this catalog.

Star Automatic Quadding Attachment

In a 6 page well illustrated bulletin, Linotype Parts Co., Inc., describes the Star Model E Automatic Quadding Attachment for application to existing Intertype and Linotype machines. May be synchronized with the Mohr Saw. Full description of its operation and how it works is included. The device centers in any given measure at left side of the slug; centers normally in any measure at right side of the slug; sets copy right flush and left flush and centers on any given measure on a 30 pica slug. Please mention PEE No. 137 when making your request.

Short Cuts with Odd Measures

This 12 page booklet published by Mohr Lino-Saw Co., is illustrated and is descriptive of what can be done with the Model D Mohr Saw when applied to 30 or 42 pica Intertypes or Linotypes with or without quadding and centering device. Slugs are sawed as they are delivered from the mold. Explained are the operations of setting odd-shaped type areas, running around cuts, butted display lines, river elimination, initials, matrix shortage, inserted headings, overhanging lines, short lines, etc. When requesting a copy of this booklet please mention PEE No. 152.

Hartco Spaceband Machine

Two page illustrated bulletin contains description of Hartco Spaceband Machine for cleaning and lubricating line-composing machine spacebands. In addition to its utility a description of its operation is included. Please refer to PEE No. 136.

To Align Worn Matrix Lugs

In a 6 page illustrated bulletin, 3¾ in. by 8½ in., is described the function and utility of the Align-A-Mat, manufactured by Fisk Industries. This is a line-composing machine matrix aligning lug swaging tool which is used to restore letter character alignment when the lugs have become worn. The function of each matrix lug is explained with respect to alignment and full directions for using the tool are given. When requesting a copy of this bulletin please mention PEE No. 143.

Type Metals

(*Their Characteristics and Their Performance*)

This 6¼ in. by 9¼ in. illustrated 58 page book, *Type Metals* (*Their Characteristcs and Their Performance*), is published by Imperial Type Metal Co. Text written for the scientific investigator, students in printing schools and for the printer. The first chapter is devoted to type metals in general; succeeding chapters are titled Line Slug Metal, Stereotype Metal, Monotype Metal, Electrotype Metal, Vitalloy Metals, Care of Type Metals, Sampling, and How to Keep Metal Fit. An appendix is devoted to answering pertinent questions about type metals. When making your request, please mention PEE No. 126.

Composing Saw-Trimmers

Hammond Machinery Builders, Inc., offers three illustrated bulletins on saw-trimmers, as follows: Hammond Ben Franklin TrimOsaw for smaller plant; Hammond Mercury TrimOsaw with ball bearing gauge, and Hammond Glider TrimOsaw with ball bearing table and enumerated features. See also under *Stereotyping*, this list of technical literature. Please mention PEE No. 139 when requesting these bulletins.

Photoengraving and Offset

Rouse Plate Saw

In a two page 8½ in. by 11 in. bulletin, the Rouse Time-Saving Plate Saw is illustrated and described by H. B. Rouse & Co. The bandsaw type of blade takes a cut 2 pts. wide with automatic feed of work into saw. Cuts copper, zinc or plastic plates whether wood or plastic mounted or shellcast. Designed for use by photoengravers, printers and stereotypers. Please mention PEE No. 140 in your request.

Photoengraving Zinc

Photoengraving Zinc is in its second edition. Approx. size of the book is 5¾ in. by 8⅜ in. Plastic bound between thick

board covers. Well illustrated. This is a treatise about the source and manufacture of zinc plate for photoengraving use. Among the chapter titles are: History, uses, smelting from ore, melting and casting, rolling, quality control, polishing, Backote, etching speed, effects of heat, composition of engravers' zincs and 16 helpful kints for the engraver. If you will mention PEE No. 147 when requesting a copy of *Photoengraving Zinc* we will see that you are supplied.

Chemco Camera Bulletins

Chemco Photoproducts Co., Inc. has prepared two bulletins about its Roll Film Darkroom Camera and its Offset Type Roll Film Darkroom Camera. (1) The bulletin about the Roll Film Camera consists of four pages, illustrated. All controls externally located. Copy board 30 in. wide by 40 in. high. Max. line negative, 19 in. by 24 in. Max. screen size, 19 in. by 24 in. Fitted integrally with film controls, screen distance setting, electronic exposure control, Chemco stop rationer and focusing scales. (2) The Offset Type Camera is similar to the one mentioned above except for differences in size, as follows: Copy board, 46 in. wide by 54 in. high; max. line negative, 21 in. by 24 in.; max. screen size, 20 in. by 24 in. When requesting either or both of these bulletins please mention type of camera and PEE No. 144.

Wesel Radial Arm Router

Four page letterhead size illustrated bulletin is descriptive of new model Radial Arm Router manufactured by Wesel Mfg. Co., for routing flat copper, zinc and lead alloy printing plates. Straight line routing or beveling attachment may be supplied. Machine furnished at speeds of 20 thousand, 22.5 thousand or 25 thousand r.p.m. Special features are described. In making your request please mention PEE No. 125.

3 Consolidated Bulletins

Three camera bulletins are available from Consolidated Photo Engravers and Lithographers Equipment Co. The first bulletin is an 8 pager continuous fold in which is described the *Consolidated Precision Color Camera* in 24 in. and 31 in. sizes. Ample illustrations show the camera itself. Sponsor states camera is equipped with all the necessary accessories to reproduce color and black and white by all the known processes and to photograph every type of copy or transparency on any type of sensitized material. The second bulletin is an illustrated continuous fold 8 pager in which are described *Consolidated Process Darkroom Cameras* in 24 in. by 24 in. and 31 in. by 31 in. sizes. The third bulletin contains information about *Consolidated's Space-Saving 16 in. by 20 in. Process Darkroom Camera.* Camera occupies a space 27 in. by 96 in. In addition to process work, the camera is designed for photocopying, master negatives, screen prints and for copying color copies or transparencies of Kodachromes and Ektachromes. Please mention PEE No. 148 when requesting any or all of these bulletins including the titles appearing above in italics.

Zomag for Photoengraving and Printing

A 34 page booklet encased in 9¼ in. by 11½ in. loose leaf cover is available from Atlantic Zinc Works. This treatise on magnesium alloy photoengraving plates (marketed under the trade name *Zomag*) has had considerable circulation but is still available to those wishing it. In the booklet are discussed development of magnesium, shop processing, etching, halftones, enamels, dimensional changes, press life routing and beveling, storage of plates, fire hazard, soldering and much other information. Please mention PEE No. 146 when requesting a copy of this booklet.

High Intensity Arc Lamp

In the four page illustrated bulletin entitled *The Strong Grapharc*, is described the high intensity arc lamp for photomechanical reproduction processes by The Strong Electric Corp. Lighting stability is obtained by variable speed precision carbon feed motor which, manufacturer states, maintains a constant arc gap length. When requesting this bulletin please mention PEE No. 132.

Stereotyping

Nine Technical Bulletins

Nine illustrated two-page technical bulletins printed in black and color are available from Hammond Machinery Builders, Inc. The bulletins are descriptive of the particular machine being discussed and contain detailed specifications. The bulletins are as follows: (1) Hammond Ben Franklin TrimOsaw for the smaller plant; (2) Hammond Mercury TrimOsaw with the ball bearing gauge; (3) Hammond Glider TrimOsaw with the ball bearing table and enumerated features; (4) Hammond EasyKaster 8 for shell high and type high casting of stereo plates furnished with or without gas or electric metal melting pot, and gas or electric box bed pre-heater; (5) Hammond Electric EasyKaster with automatic metal temperature control for the 400 lb. capacity pot, made in two sizes (5 col. by 20 in. and 6 col. by 24 in.), is claimed to reduce casting time as much as 50%; (6) Hammond Full-Page Stereotype Mat Flat Scorcher with electric heating elements and variable thermostatic control; also on the reverse side of this bulletin is illustrated Hammond Gas or Electric EasyKaster Flat Scorchers with bed size of 15 in. by 27 in. and primarily designed for use in connection with Easy-Kaster plate casting equipment; (7) Hammond Full-Page Shaver designed for use by the larger weekly and smaller daily newspaper plant with ball bearing table and carbide-tipped shaving knife for shaving shell and type high stereo casts; (8) Hammond Radial Router for routing type high stereos and mortising shell plates; (9) Hammond Router Planer for routing, type high planing, shell mortising, straight-line routing, beveling and rabbeting and is of full page capacity with router bit sharpening device. When requesting any or all of these bulletins please mention each by name together with PEE No. 139.

Sta-Hi Master Trimmer Curved Mat Registering Machine

This four page well illustrated bulletin is descriptive of the Sta-Hi Master Trimmer Curved Mat Registering Machine for registering newspaper stereotype color plates. Sponsor states color register is obtained speedily in the mats, making it possible to use first-class color plates. Please mention PEE No. 130.

Better Quality with High Shrinkage Mats

Illustrated bulletin, single page, contains discussion about the Alico Evenray Mat Drier for pre-shrinking and setting mold depth of high-shrink mats, manufactured by Alico, Inc. Operates by infrared heat and gold plated reflectors on two sides of the mat simultaneously. Drier is automatic in action. Sponsor states final shrinkages up to 1¼ in. per page are being obtained with this equipment. In your request please mention PEE No. 124.

Immersion Metal Melting

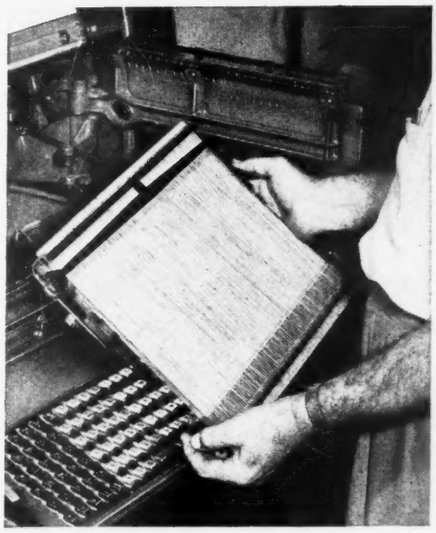
Gas-Fired Immersion Metal Melting for stereotyping and electrotyping is fully described and illustrated in a 12 page two-color bulletin issued by The C. M. Kemp Mfg. Co. Specifications of equipment for stereotype, remelt and job pots and electrotype pots are presented. How the equipment works and operating data are given. When asking for this bulletin, please mention PEE No. 138.

Stereotype Metal Pump

A handsome four page illustrated bulletin printed in silver and black, 9 in. by 12 in. size, contains a description of the International Electro-Pressure Automatic Metal Pump. Sponsored by International Newspaper Supply Corp. May be applied to existing and new stereotype metal and remelting pots. Metal is delivered under regulated pressure by motor-driven impeller blades through an adjustable spout. Pump is fully explained with diagrams and halftone pictures. Please mention PEE No. 131 in your request.

Stereotex Automatic Matrix Molding and Space-Packing Press

The Stereotex Automatic Matrix Molding and Space-Packing Press is designed for molding and packing black and white newspaper stereotype mats. Other models of presses are illustrated and described for rubber or plastic plate production. A feature of the first named press is that in a few seconds, states sponsor, the press automatically, accurately and economically backs the space levels of the mat, thus eliminating all hand packing. Other features of the 900 T. press are described. Please mention PEE No. 141 when requesting this bulletin. *(To be continued next month)*



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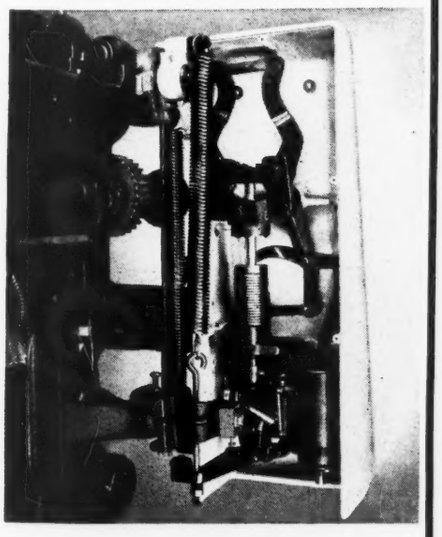

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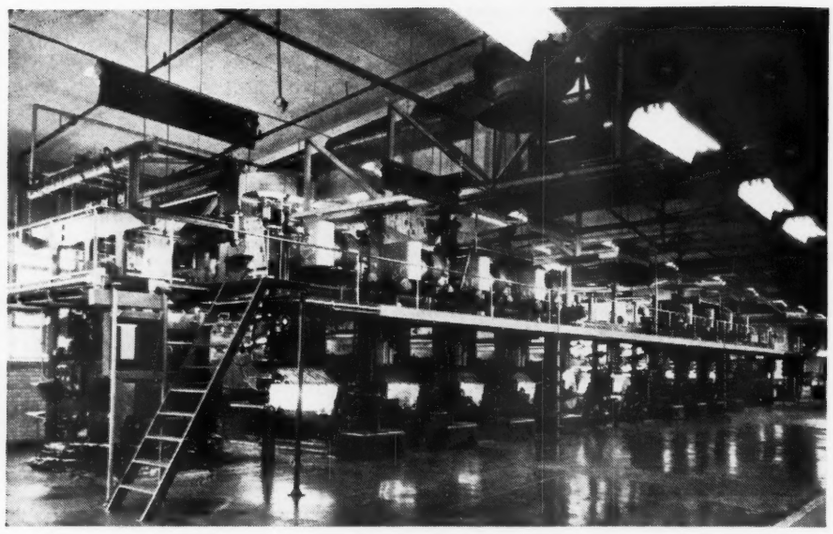


View of Talio-Crome (gravure) printing press in plant of Brown & Bigelow, St. Paul, Minn. Press was built by George F. Motter's Sons, York, Pa. Four colors can be printed once through the press on both sides of the paper. Press is claimed to produce 10 thousand sheets and /or booklets per hr. Work may range from pocket-size booklets to large posters.

Brown & Bigelow Million $ Color Improvement Program

A MILLION dollar color printing improvement program, including a $600 Thousand multicolor Talio-Crome press, is nearing completion at Brown & Bigelow, St. Paul (Minn.) advertising specialty firm.

Principal units in the program besides the press are:

An electronically-regulated printing cylinder etching room.

A battery of precision control machines for transferring color images. Large gravure art cameras.

All of the installations were specially constructed to heighten reproduction quality of the company's Talio-Crome printing process. Brown & Bigelow describes Talio-Crome as "the process that prints as the artist paints, laying primary color on primary color and mixing them on a surface of the paper to reproduce a painting with complete fidelity."

The new $600 thousand press, final step in this special method of intaglio printing, has electric eye controls that confine reproduction register tolerances, or "error," it is claimed, to 0.0001 in.

While developed specially for the printing of calendars, the company's leading product, the press is quickly adaptable for color work ranging from pocket-size booklets to large posters. It is a 100 T. dual giant 104 ft. long, 15 ft. high, and 14 ft. wide.

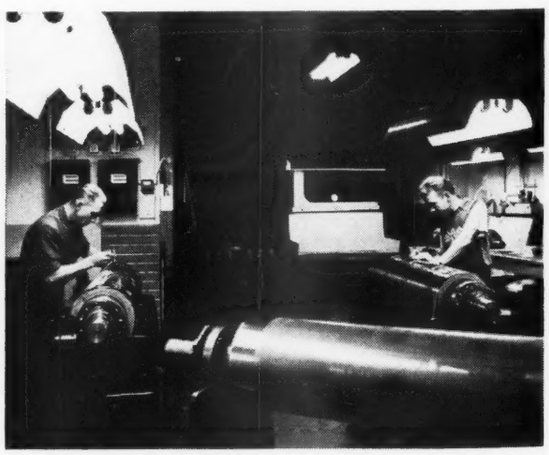
The press and other components of the improved color printing program are in the company's Graphic Arts division in its main plant at 1286 University Ave., St. Paul, Minn. Here, in 1932, President Charles A. Ward, then General Mgr., had directed installation of the company's original Talio-Crome press.

Ward had seen samples of a certain type of German printing and visualized its possibilities in terms of Brown & Bigelow color printing. The first Talio-Crome press was made in Johannisberg, Germany, and assembled in the Brown & Bigelow plant by German technicians.

The new press is the fourth Talio-Crome press. Planning for it and the allied improvements began during World War II. Brown & Bigelow Graphic Arts technicians and engineers drew the specifications, with instructions from Ward to "design a machine that will reproduce originals so faithfully that only microscopic examination can detect the difference."

Construction, by George F. Motter's Sons, York, Pa., began in 1949. The press was completely set up at York, then dismantled and shipped to St. Paul in sections. Five freight cars were required to haul it. Installation by Brown & Bigelow began last Christmas.

The dual machine can reproduce from one to eight colors at the rate of 10 thou-



View in section of the electronically regulated etching room, Brown & Bigelow, St. Paul, Minn. Here the operators are readying gravure printing cylinders previous to etching.

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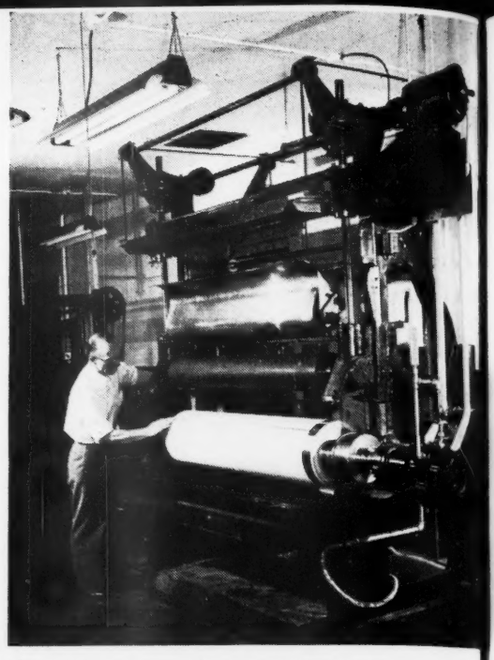
sand sheets and booklets an hour. Its dual feature is that four colors can be printed simultaneously on each side of the paper. One four-color section can be rolling full blast while cylinders are being changed on the other section.

It prints from huge rolls of paper which, after printing, are rerolled, cut into sheets, or folded, depending on how the press is set. Variations permit one printed web to run to a folder while another feeds into a sheet delivery.

The electric eye regulating register to 0.0001 in. is in a master control board. There are 13 other control stations at each of which the press can be started, stopped, speeded up, or slowed down. The new machine fitted more than a mile of electric wiring and 53 electric motors from ¼ h.p. to 50 h.p.

As the paper leaves the feeding rollers, it is steamheated to eliminate static and provide a printing surface elasticity for register. It passes over printing rollers, then through electrically-heated ovens to dry the ink after each color.

Guide rollers are cushioned by tiny compressed air jets that keep the paper webs floating instead of pulling around turns. This floating tension is another factor in maintaining register. Importance of the minute register is that it eliminates retouching, reprinting, and reruns. Though mechanical, the machine requires the constant supervision of a crew of 10 men.



This machine is used for transferring images (carbon tissue laydown) to copper-plated rotogravure printing cylinders in plant of Brown & Bigelow, St. Paul, Minn. Those executives somewhat familiar with this operation will recognize the means shown in the picture for transferring images under controlled conditions to the cylinders.

The new printing cylinder etching room is constructed much like a large walk-in refrigerator. Here the color images are transferred to copper cylinders for the press. Electronic devices maintain humidity at 57 deg. and temperature at 72 deg., with no more than a 1 deg. variation.

This is another step in five register control because transfer materials are sensitive to temperature and moisture. The transfer itself is accomplished through a new machine that has no tolerance.

Color negatives are sent to the cylinder etching room from a battery of the new box-like precision control devices. In these devices, color separations are automatically fitted to register through mechanical calibrations.

One of the big new gravure art cameras already has been installed and others are being built. These cameras photograph the original and place the image on a glass negative.

The new cameras can handle originals from the size of a postage stamp to a large billboard and can enlarge or reduce the negative. Each camera has its own darkroom and developing stand.

Battery Charging Equipment

FOUR page illustrated bulletin is descriptive of The Electric Products Co.'s Motor-Generator Battery-Charging Equipment, for charging motorized lift truck and Edison batteries. Truck operator can operate the equipment. Fully automatic operation and it is claimed no manual attention is required. Charging plug is polarized to prevent possibility of error. When requesting this bulletin, please mention PEE No. 157.

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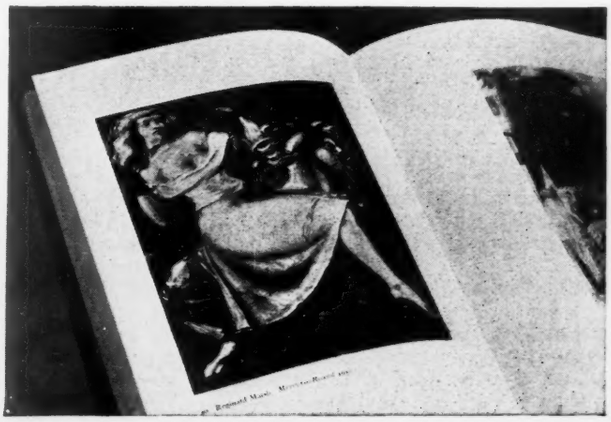

ART-MUSEUM CATALOG CONTAINS 52 SCAN-A-GRAVINGS. Proof that the Scan-a-gravings of today can satisfy even the severest quality requirements is shown in an art-museum catalog containing 52 black-and-white halftone reproductions of full-color paintings. The quality of the 120-line reproductions – all of them made from Scan-a-gravings, ranging from 3 x 5 to 6 x 7 inches – is considered outstanding for this kind of work.

"ONE OF THE FINEST PRINTING JOBS SEEN ANYWHERE." Scan-a-graver user, *The Daily News-Tribune*, LaSalle, Ill. newspaper, was recently awarded the 1951 F. Wayland Ayer Cup for excellence in typography, presswork, and make-up. According to the paper's mechanical superintendent, the Scan-a-gravings used in the award-winning edition were said to have played an important role in winning the award. Said the judges: "One of the finest printing jobs we have seen anywhere at any time."

JOB SHOPS THRIVE ON PLASTIC-CUT BUSINESS. The convenience and economy of the Fairchild Scan-a-graver has brought new life into the job-printing business. Many shops have been able to offer while-you-wait engraving service at lower prices than they previously charged for one- or two-day service. Until recently, most of this work has been limited to the 65- and 85-line field, but the perfection of the new 120-line Fairchild Scan-a-graver has now opened new horizons to the job printer.

● *For more data on the Fairchild Scan-a-graver, write today to Fairchild Camera and Instrument Corporation, 88-06 Van Wyck Boulevard, Jamaica 1, N. Y., Dept. 100-23E.*

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The Aller Plate

Grainless Offset-Lith Plate With Raised Image

By ADAM HENRI REISER

SINCE introduction of the Aller offset-lith printing plate in this country, additional research work has been undertaken both by Fred'k H. Levey Co. and the Aller Company. One of the accomplishments is an improved positive method. Other developments are mentioned in this article. One of the objectives in the use of the Aller plate is to secure longer press runs. In addition, in our present war-like economy, higher press speeds and emergency papers substituted for regular stock combine to compel the use of tougher images on the plate.

As it comes to the offset-lith platemaker from the supplier, the Aller plate is a stainless steel plate upon one side of which has been electro-chemically deposited a thin layer of copper. This copper is fashioned into the printing image by judicious application of chemicals, light, and the platemaker's skill.

Will Stand Rough Usage

The image produced on the Aller Plate is a tough one, the rubbing wear of friction or over-pressure in any form apparently has little effect on the image. It may yield poor prints in one form or another under certain circumstances, but the image is not seriously marred unless attacked with strong nitric acid. Yet the production of the image is almost as simple as that of the deep-etch plate.

Nowhere on this plate is there any semblance of grain as we know it on the offset-lith plate. All surfaces on the Aller Plate are smooth, providing a printing dot that is not distorted by an irregular surface.

Some time ago I attended a lecture at which the speaker told of an ideal condition in which two metals are combined, one holding the image, while the other acted as a base for that image. When these two metals had opposite reactions to the same chemical, that is to say, application of one chemical making the image more grease receptive, while the same chemical increased the affinity for moisture on the other metal, then pretty nearly ideal conditions had been reached, contended the speaker.

Combine Stainless Steel and Copper

Such a combination seems to be the stainless steel and copper of the Aller Plate. Copper's grease receptive property is intensified with a wash of dilute phosphoric acid. On the other hand, the same dilute phosphoric acid wash applied to the stainless steel will produce a covering on the steel which increases its hygroscopic nature or moisture-retention quality. Further, these reactions occur without any evidence of grain such as may be produced mechanically or through strong corrosives.

So far then there seem to be the following properties: (1) Durability of image; (2) Dots not broken up by grain, and therefore a better quality of image; (3) Less moisture and ink necessary to print because of flat surfaces rather than rough, grained printing surfaces; (4) The same coating and developer is used to produce the image whether a negative or positive is used. The durable image can be produced through a negative or positive.

How is the Work Produced?

Steps in the production of the image through the negative or positive are identical to a certain point. First, the copper surface is thoroughly cleansed by scrubbing with pumice powder and a sulfuric acid solution (4 oz. to a gallon of water).

Second, following this, a light-sensitive coating is whirled to the plate in the regular offset-lith manner. This coating, only recently colored by the addition of a dye, when dry on the plate, hardens under the action of light, forming a resist, the unexposed portion developing away under the action of a suitable developer. Bear in mind that the entire coating, whether hardened by the action of light or not, is water soluble.

Third, when the plate is thoroughly dry, it is placed in a vacuum frame and exposed under a negative or positive. The exposure time varies as to the medium used, the time for positives is much shorter than that for negatives.

Let's stop at this point and after exposure examine the result. Assume for the sake of illustration, that we have exposed a single letter A, Fig. 1. If that were in positive form then the areas around the letter would be hardened through the action of light. If exposed through a negative, then the area within the letter being open would be light-hardened, while all other portions of the coating would be unhardened.

The fourth step is the development operation. Here, with the application of a special solution of prepared developer, the unhardened or unexposed areas are dissolved, leaving the copper beneath exposed to view. Two applications of the developer usually suffice, leaving the copper clean of the coating. Figs. 2 and 3.

In Figs. 2 and 3 are shown the appearance of the developed plate. In Fig. 2 the plate is exposed under the positive, while in Fig. 3 the plate is shown under the negative.

It is at this point that the operations differ for the two different films—negative or positive—used. Realizing that the copper will take the ink and that no copper is to remain where there are to be no printing areas, the operator will want to etch the plate to remove the copper in those areas only where it is exposed to view. In Fig. 3 the plate under the negative is now ready for that etching step. However, the plate under the positive in Fig. 2 shows copper in the A and therefore some step must be taken to protect the copper if we are to retain it to act as a printing surface.

Therefore in Fig. 3 the plate under the negative is now etched after the developer has been removed with alcohol. Etching reduces the copper without acting on the hardened coating, commonly referred to as a stencil. The etch does not affect the stainless steel. When the copper has been removed, the plate is flushed with water Fig. 5 which removes the etching material and also dissolves the stencil, (which protected the copper from the etch in the work areas). Rubbing over the plate with a dilute phosphoric acid solution on one rag and ink on another will ink the copper image. Unwanted work, marks, dirt or changes may be removed easily with concentrated nitric acid applied on a stick while the plate is thoroughly dry, and then washed off. The plate is then gummed up and is ready for use.

The Positive Method

Examination of Figs. 2 and 3 reveals the bare copper has been exposed under the A by the developing operation. As mentioned previously, etching the plate at this point will remove the copper and thus destroy our printing image. To protect this copper then, we apply Resist No. 1 which deposits a coating of silver

Fig. 1.—For illustrative purposes, the capital A represents the copy from which the plate is to be made.

Fig. 2.—This figure illustrates the developed plate under a positive.

Fig. 3.—This figure illustrates the developed plate under a negative.

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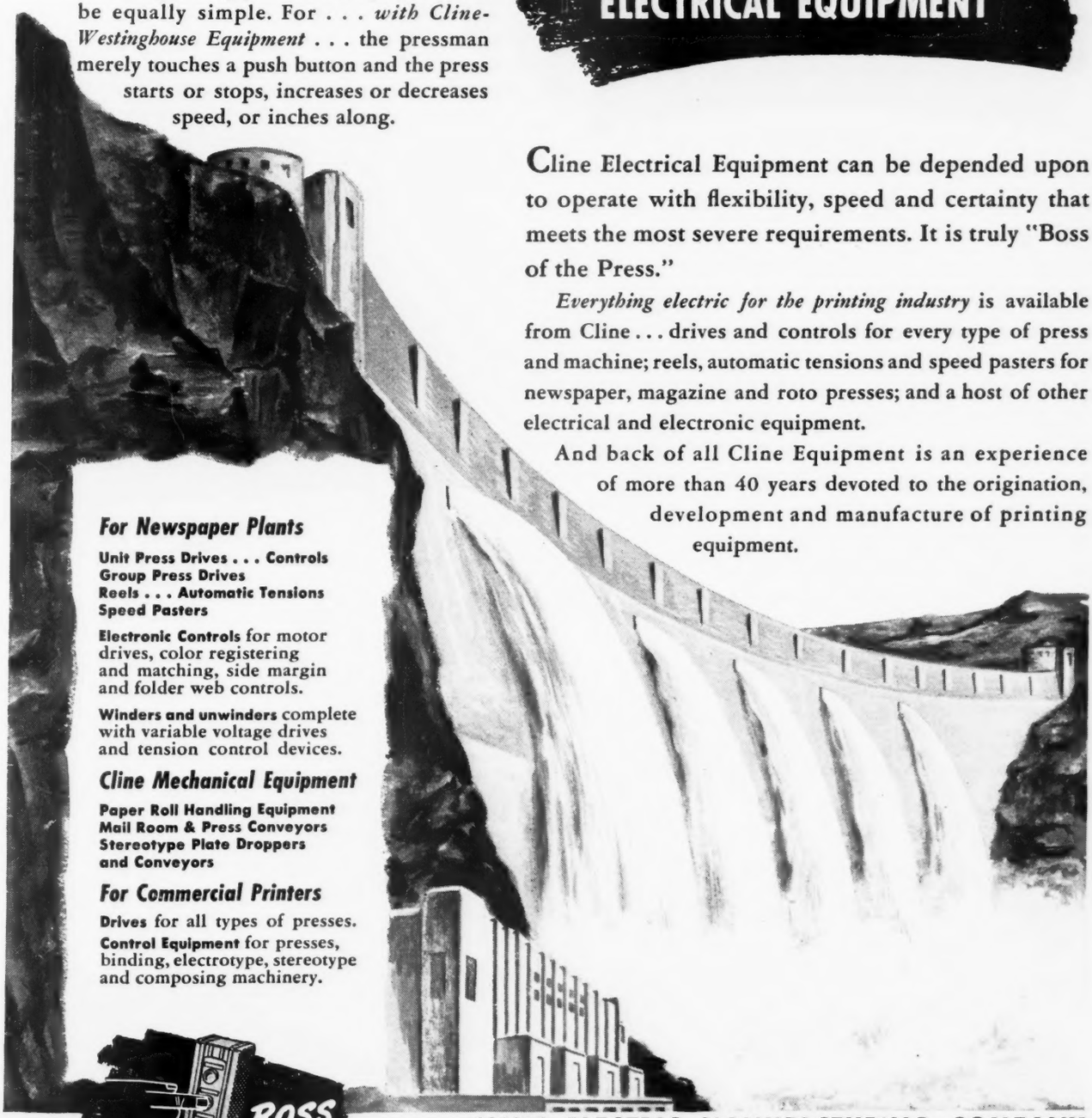

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Fig. 4.—The plate has just been developed and the developer is now being squeegeed from the plate. The light areas, like the word Aeroil (visible directly over the panel) represent copper which was under the positive and therefore is not light-hardened.

over the copper. One application of the resist usually suffices, although should there be evidences of the resist not taking properly, it is possible to go back over an area with developer to remove any traces of coating that may remain. The resist is then washed off with alcohol, which is squeegeed off and Resist No. 2 applied. This is very similar to deep-etch lacquer and is smoothed down with tissue. After it has been dried through the action of a fan, Resist No. 3 which is an ink, is applied with the tissue and rubbed down as smoothly as possible. It is necessary to follow with a breyer in order to deposit a smooth film of ink and the whole plate is then powdered with talc.

Washing the plate with hot water will then remove the stencil or lighthardened coating and the whole is then washed with a 10% solution of nitric acid. It is essential that all traces of the stencil be removed.

After all the unwanted work or dirt has been cleared off the plate with a snake slip or rubber stick the copper is removed from the plate where it now is exposed and where there are to be no printing areas. The etch, used to remove the copper, is applied with a wad of cotton, the parts first to be attacked being the large areas of copper. The whole plate is now cleared after which it is flushed with a 2% sulfuric acid solution for the purpose of keeping the stainless steel clean.

The plate is then gummed and is now ready for the press.

Research Has Effected Improvements

As the result of additional research on these plates by Fred'k H. Levey Co. and the Aller Company, an improved positive method has been developed. The dyed coating has recently been added. This coating is not critical, yet is much faster than that formerly used. Since the majority of shops used the positive as a final, any platemaking method has had to include practical and efficient steps for use with a positive. Methods of staging with shellac before development as in deep-etch have been devised. The use of a coating solution after development is also advocated in staging after development, using no light-hardening action after it. The three resists are recently combined Levey-Aller developments. A neat way of adding copper for changes makes use of two dry cells and copper sulfate following a pickling solution.

Some musts are to be observed. No sulfur powder or other material should be used on the press blanket. Its use will reduce the copper and so lose the image. The dampeners and rollers are to be set lighter, the picture formed by the rollers when dropped on a dry plate should show bands of no more than ⅛ in. width. With proper setting and observance to precautionary measures 4 million impressions have been rolled from such a plate. The regular fountain etch is used.

The copper coating is extremely thin (of the order of 0.0002 in.) but reportedly it has tenacity and ink affinity.

Fig. 5.—Here the operator is washing the acid off the plate with a stream of water. The acid has eaten away the unwanted copper around the image which are the black areas on the plate.

Carnegie Reunion

A two day program of technical talks and panel discussions made up the recent annual spring reunion of Carnegie Institute of Technology printing management alumni. Possibilities for applying to the printing industry new methods of operation analysis were discussed by Prof. Rob Roy, Assistant Dean of Engineering at Johns Hopkins University. Standardization of methods, Roy said, plus good human relations, followed by the selling of these methods to production personnel, are the requisites of more efficient production.

The relationship of management to employees and of cost to the current cost squeeze was discussed by Carl Braun, Vice President of W. F. Hall Printing Co., Chicago, in a reunion address. A Carnegie alumni panel on typographical trends include O. Alfred Dickman, Advertising Production Mgr., New York *Herald-Tribune*. A clinic on *New Developments in Photolithography* was conducted by Michael H. Bruno, Research Mgr. of the Lithographic Technical Foundation.

An alumni technical panel on management was composed of Robert Kable, Vice President of Kable Brothers, Mount Morris, Ill.; James Rudisill, President of Rudisill and Co., Inc., Lancaster, Pa.; John Sayles, Kable Brothers; and Nelson Mitchell, Production Mgr. of McArdle Printing Co., Washington, D. C. Toastmaster at the reunion banquet was Alex Dittler, President of Dittler Brothers, Atlanta, Ga.

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Weather-proof Synthox rollers keep press operations fair, clear and cool in any climate and any temperature.

Synthox *soft synthetic* rollers have proved their worth in pressrooms all over the country by giving steady, year-around production at high speeds in all kinds of weather. They are equally as good in heat-set or moisture-set inks as they are with linseed base inks. For halftone and color work they can't be topped. Ease in handling and washup makes them a favorite with pressmen.

You need these fine Synthox rollers in your pressroom to keep your costs on a competitive basis. Why not invest in them now and gain years of usage when you need it most? This is the year to modernize your pressroom with Synthox rollers.

★ **IDEAL ROLLER & MANUFACTURING COMPANY** ★

6069-6073 Maywood Avenue
Huntington Park, Calif.

2512 West 24th Street
Chicago 8, Illinois

21-24 Thirty Ninth Ave.
Long Island City 1, N.Y.

Test Shows Production Time Savings

TEST use of a recently developed method for tying page units with an adjustable metal frame for publication printing was conducted in the Cleveland commercial printing plant of A. S. Gilman, Inc., during July. The test was conducted under the supervision of Supt. George Ebert and Composing Room Foreman George Mayer.

Superintendent Ebert stated mechanical and production executives are increasingly on the lookout for new devices and they try to devise methods which will help reduce production costs. They make every possible use of work simplification devices.

The device under observation at the Gilman plant is the Riehlock makeup frame and adjustable tieup. The frame is made of aluminum alloy. It consists of two right angle sections each dimension of which is slotted. When two of the sections are placed together they form an adjustable rectangular area inside the makeup frame. Knurled flat top fillister head screws fasten the two sections together rigidly and when loosened permit adjusting the interior of the frame to the desired pica measure. The screws, while rotating freely when loose, are treated at the lower end so they cannot drop out of the frame. The screw heads are slotted to permit turning either with screwdriver or makeup rule. The two sections slide freely after the screws are loosened by means of a rail and groove in the joining sections.

The closed inside dimension of the frame is 5 in. by 8 in. The fully expanded inside dimension is 8½ in. by 14½ in.

A pica em scale with 6 pt. divisions on each leg of the two angle pieces enables the compositor or makeup man to adjust the frame readily and to use the setting as a gauge for the page or the composition which is to be placed within the frame.

The use of the frame, of course, eliminates the string tying operation. When a compositor has filled a frame, the frame remains on the type unit from proof press to lockup, and also remains around each page or unit in the form while on the press. It is not removed until after the form is to be broken up. If some of the page units are to be put in storage for repeat runs, the frame may be left on the galley or around the type for shipping purposes.

Superintendent Ebert's comment after the first use of the makeup frame and adjustable tieup on one of the monthly publications printed at Gilman's was:

"The pages were assembled in the usual way but inside the frame which is previously adjusted for proper page width and depth (allowing for normal squeeze). The makeup man now has a perfect measure to work with and can justify the page perfectly. The use of this frame, with the perfect justification of columns makes for a perfectly square lock-up, eliminating any chance of pages becoming crooked when locked up. The saving on press register time and imposition alone makes the use of this frame practical. We feel that it certainly doesn't take any longer right now to use the frame on the compositor's worktop than it does to tie up the page with string. No two men will tie up a page exactly alike. With the frame, however, putting the pages together should be done with greater accuracy and without a doubt, after the compositors become used to it, the frame will be a faster means of holding pages together than when string is used.

"On the lock-up stone, the operation of untying the string from each page is eliminated, as well as tying each page again with string when the form is to be broken up after the press run. The elimination of string for untying and tying pages will amount to a great saving in form lockup time.

"The forms on which we used the makeup frame consisted of 16 pages each to be printed on a 38 in. by 50 in. sheet. The frame around each page was locked in the form and was not removed until after the form was broken up after the press run.

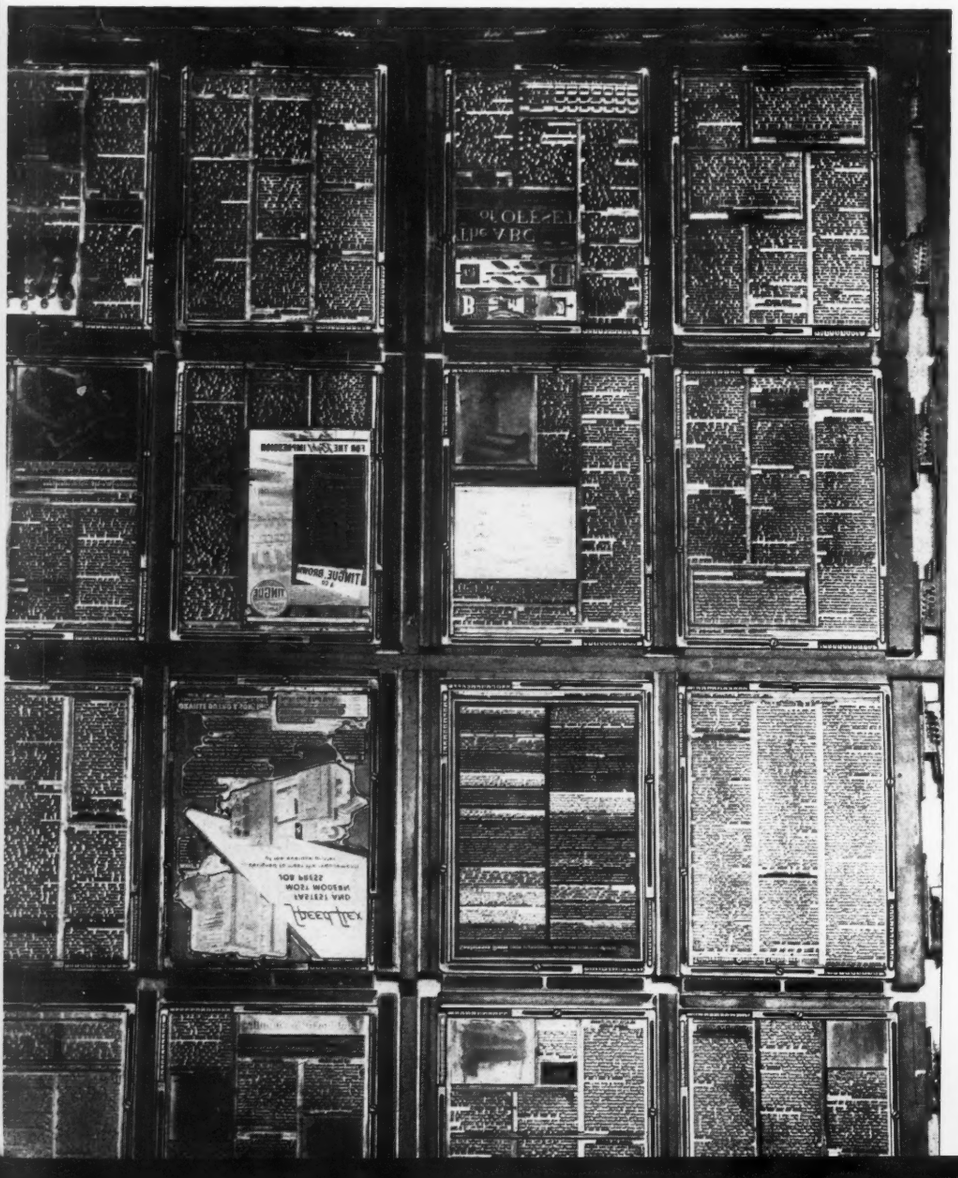
"Much of our work is composed on the Monotype. We find that in the case of pages enclosed in the metal tieups, the hazard of pieing a page or part of a page is eliminated.

"Our pressroom foreman reports a total absence of workups. He also stated there is a saving in press register time.

"We also feel that the use of the frames on jobs which are to be reprinted three or four or more times a year and where revisions must be handled a number of times, will result in considerable saving in production time. The device promotes accuracy, according to our observation."

Mr. Ebert said he anticipates much better performance from the frames after all workers coming in contact with them throughout the plant have accustomed themselves to proper usage.

Supt. George Ebert (left) of A. S. Gilman, Inc., discusses page makeup and adjustable tieup frame with Jack Riehl of Riehl Galley Lock Co. Frames used in form below.



Newspaper industry acclaims glass-beaded draws and blankets!

Pressmen are saluting "SPHEREKOTE" Drawsheets and Blankets that make dinkies run cleaner with less offset—less spoilage. That's because these modern press packings resist ink smudge — resist smear — reduce slurring — reduce offset — even on quarter-width rolls.

And these popular press packings with their tough, glass-beaded surfaces give millions of extra impressions with fewer press stops for maintenance.

Save replate time! Save newsprint. Get the press packings that give clean runs *every* time on all pages, *even with dinky rolls!* Put "SPHEREKOTE" Draws or Blankets on your presses. You'll be money ahead. Fill out and return the coupon below for sample swatches and complete information.

"SPHEREKOTE" Drawsheets, Blankets cut costs all over the plant	
Make-up	More preferred positions for cuts and advertising. Make-up moves faster, with fewer interruptions. Allows tighter papers.
Stereotype	No last-minute re-casts to re-position ads or cuts which are picking up first-impression offset.
Press room	Fewer press stops for replating; no waste copies from first-impression offset.
Maintenance	Press packing with "SPHEREKOTE" Drawsheets in many cases lasts up to three times longer!
CUT OFFSET AND YOU CUT COSTS!	

WRITE TODAY FOR COMPLETE INFORMATION!

Minnesota Mining & Mfg. Co., Dept. PEE-81
St. Paul 6, Minn.

Send Swatches and Price List ☐
Have representative call ☐

Name.....

Company.....

Address.....

City.....Zone...State.....

REG U.S. PAT. OFF.
SPHEREKOTE
BRAND
DRAWSHEETS and BLANKETS

Made in U.S.A. by MINNESOTA MINING & MFG. CO., St. Paul 6, Minn., also makers of "Spherekote" Tympan Covers, "Spherekote" Frisket Sheets, "3M" Brand Photo-Offset Plates, "Scotch" Brand Pressure-sensitive Tapes, "Scotch" Sound Recording Tape, "Underseal" Rubberized Coating, "Scotchlite" Reflective Sheeting, "Safety-Walk" Non-slip Surfacing, "3M" Abrasives, "3M" Adhesives. General Export: Minn. Mining & Mfg. Co., International Division, 270 Park Ave., New York 17, N. Y. In Canada: Minnesota Mining & Mfg. of Canada, Ltd., London, Canada.

The ABC of OFFSET

For Letterpress Printers

By George Jos. Lenzer

XVIII—INDIRECT PROCESSES

THE term, Indirect Process, has different meanings in the production of offset-lithography, and is applicable to several distinct procedures. Generally, the indirect processes require continuous tone negatives and/or positives as copy for the production of the final halftone reproduction. (Fig. 31).

Utilization of the indirect processes is based upon some one or other of the following reasons:

1.—Size and nature of the original copy.
2.—Camera size limitations.
3.—Finished sizes of the reproductions.
4.—Extent of correction for color or detail required.
5.—Photomechanical process to be employed, camera or contact duplication.
6.—Dot size and screen ruling required.
7.—Kind of stock to be processed or converted.
8.—The kind of printing plate required, Albumen, Deep etched, multi-metal or other.
9.—Number of impressions, length of press run; *i.e.*, hundreds, thousands or millions.
10.—Probability of reprints of an edition.

These are definite factors to be considered when planning and estimating a job definitely requiring an indirect process.

Simple One Way Process

A.—A halftone negative is made directly from the original copy. This negative is staged, etched and corrected, cropped, scaled to size, masked and opaqued. At this point the negative can be used to produce an albumen plate.

If a deep-etched plate is required with images of more than one size, then the corrected negative is re-photographed in the camera to the designated dimensions. This operation is commonly referred to as, the copy dot process.

Where a deep-etched plate requires an image the same size as that on the halftone negative, a positive is made by contact printing on a glass plate, regular, thin base or strip film.

Since the positive must read from right to left as in the negative, it is obvious that the contact print must be made with the negative back, in contact with the emulsion face of the positive material. If a glass photo plate is used to produce the original negative, (dry plate); then the positive must be made by a camera exposure at same size settings, in order to effect a reversal of the image in the positive.

Stripping a dry plate, although possible, is never or seldom done in offset procedures.

Where an extra camera operation is necessary to produce a halftone positive, the term *Two Way* process is applied.

Three-Way Process

B.—The Three-Way process is a definite requirement where a certain or specific illustration or design must be reproduced in a wide range of different sizes, or where original copy is of such a size as to be impractical or impossible to reproduce in a single photographic exposure.

Frequently an intermediate sized negative or positive is more easily corrected than is one of great enlargement or of too small a reduced dimension.

Examples:

B1—Size variations of a single design may include a postage stamp size, through letter heads, envelopes, inserts, mailing pieces, blotters, car cards, counter and window displays, and posters from ¼ sheet to 24 sheet sizes.

B2—A miniature color transparency may need to be enlarged to illustrate a can label, box top or some other item requiring an enlargement of four to five times. Correction at the required size may be difficult to accomplish, consequently, the enlargement is made greater than the final size dimension.

After correction on the continuous tone negative and/or positive, the enlarged image is re-photographed and the halftone reproduction is made at the designated final image size.

In production of the continuous tone and halftone reproductions for the three-way process at least three distinct camera exposures, a continuous tone negative, continuous tone positive and the halftone negative, made to the correct size for the final image impression, are photographically produced.

Screen rulings may of necessity have to be varied, when making the halftone exposures.

Four-Way Process

C.—By this process, the camera man, and the correctionist really gets a workout.

First, a continuous tone negative is produced.

The color artist or correctionist, chemically reduces the shadow areas of the negative, rendering these areas more transparent. He then accentuates the high lights and intensifies, or renders more dense, the areas representing the lighter tones appearing in the original. All un-wanted areas are painted out, or rendered opaque.

Second, the negative is then photographed, producing a continuous tone positive.

Retouching the continuous tone positive is the next operation by the correctionist, who chemically clears the positive if necessary, to eliminate any possible scum-forming silver deposits.

When dried, the positive is manually corrected by the intensification of the shadow areas, which are rendered more dense. Solids and specific detail are painted in with opaque.

Each step and operation of correction is done with the main purpose of accentu-

(*Continued on Page 92*)

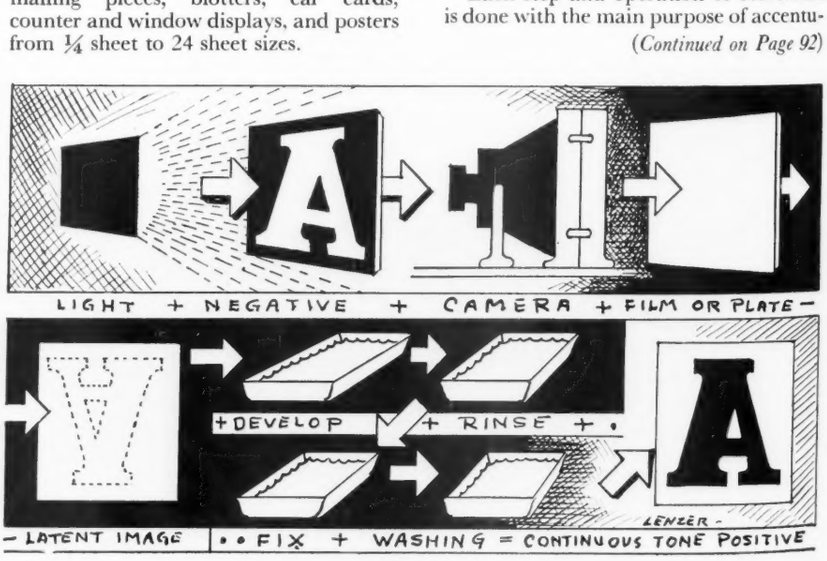


Fig. 31.

Greater Flexibility In Tribune's Color

GREATER flexibility in publication of color advertising was achieved by the Chicago *Tribune* on July 3 when for the first time it successfully printed color advertisement on inside pages of a section simultaneously with the page 1 color cartoon which is a regular feature of the daily *Tribune*.

The July 3 *Tribune* carried color advertisements on pages 4, 19, and 22 of the first section in addition to the color cartoon on page 1. This achievement, said John W. Park, Production Manager, resulted from improvements and adjustments developed under the guidance of O. R. Wolf, Asst. Production Mgr., in the operation of color decks on the presses.

Previous attempts to publish color on inside pages as well as on page 1 and the back page of a section had resulted in too many paper breaks and pressroom delays. A major factor in correcting this situation was development of a means of controlling the pull of the paper web after it goes over bay window bars in the type of press run required for such color presentation.

Prior to attempting such color publication in a regular daily edition, the *Tribune* production staff tested the mechanical revisions on all presses used for the run, both to ascertain that no excessive number of web breaks would result causing delayed press starts or low production, and to familiarize pressroom personnel with new leads required for the bay window run.

As a result of this accomplishment, the number of color pages which the *Tribune* is able to publish in a non-collect run of less than 48 pages, with its limited number of sections, has been significantly increased. At the same time the new run provides a much greater degree of flexibility to the positioning of color advertisements in the makeup of a collect run.

Products advertised in color in the July 3 *Tribune* which first demonstrated this achievement were Hamm's beer, Blue Bonnet oleomargarine, and *Holiday* magazine.

During the first six months of this year, prior to the development of its new press run, the *Tribune* carried 207 full pages of newsprint color advertising.

Pre-lim
Rockefeller Survey Report

IN connection with its Survey of the Printing Industry now being conducted by the printing engineering firm of J. W. Rockefeller, jr. & Associates, early returns to a questionnaire sent to commercial printers indicate that 85% of the industry believes that the threat of the private printing plant has increased during the past few years.

Seventy-two per cent of those answering the questionnaire believe improvements in equipment are necessary to combat this trend, a substantial majority expressing the belief that such improvements to be effective should increase production 50%. (19% for 20% improvement, 44% for 50% improvement, 6% for 100% improvement, 31% no opinion). The majority of those replying believe such improvements are most needed in composing machines, although a substantial number believe there is an almost equal need in sheet-fed letterpress equipment. Most express the belief that further mechanization of hand operations is necessary.

That there exists a keen interest in the subjects being treated in the survey is evidenced by the fact that 25% of printers returning questionnaires supplemented their returns by rather detailed letters, many of which outlined the reasons for the encroachment of the private plant on the commercial printer's business and, in some cases, suggesting remedies. To refuse to sell paper, ink and supplies to such plants to considerably more moderate measures, including the installation of more productive equipment, beyond the reach of the average private printer, by the commercial printer.

It is hoped the final report will be ready by October. According to the Rockefeller organization, the views of additional printers will be welcome. Questionnaires may be obtained by writing to J. W. Rockefeller, jr. & Associates, 140 Cedar St., New York 6, N. Y.

Your orders to EASTERN

FILLED WITH CARE
WITH SPEED
WITH ECONOMY!

In spite of growing shortages in certain metals and other materials, you can depend on EASTERN for a *complete* line of equipment, supplies and accessories to speed your newspaper printing production.

For your next order, try these EASTERN products, each tested and *proved dependable* in hundreds of the nations' newspaper plants.

BACK-UP BOARD .015 FOR 18 GAUGE ZINC
TRU-MOLD CORK MOLDING BLANKETS
PLASTIC MOLDING BLANKETS
DEEPMOLD BLANKETS
FLECTO GUMMED BACKING FELT
(Individually packed 5 sheets per bundle)
DOUBLE COATED CUT MOUNTING TAPE
—¼", ½", 1", 2"
DIRECT PRESSURE MOLDING MATERIALS
EASTERN CIRCULAR SAW AND JIG SAW BLADES
MATRIX SCORCHER... MATRIX TRIMMING KNIVES
ASBESTOS COVERS FOR ALL SCORCHERS
CURVED AND FLAT CASTING BOARD
COMPOSING ROOM AND STEREOTYPE EQUIPMENT

Representatives For:

STA-HI CORPORATION: Master Former . . . Premier Shaver . . . Power Form Lift . . . Vacuum Casting Box . . . Masterouter.
AMERICAN STEEL CHASE CO.: Newspaper Chases . . . Make-Up Trucks.
H. B. ROUSE COMPANY: Accessories and Equipment.
CHALLENGE MACHINERY COMPANY: Composing Room Equipment.

EASTERN FOR ECONOMY

EASTERN NEWSPAPER SUPPLY, INC.
9603 Northern Boulevard, Corona, L. I., New York

No other equipment offers ALL the advantages of

LAKE ERIE ACRAPLATE

Rubber and Plastics Molding Presses

MODEL 11 ACRAPLATE—Designed for smaller work in all types of plants. Unequalled for simplicity of operation and overall economy. 115 tons capacity with 17″ x 22″ platens.

● As more and more printers and publishers discover the reproduction qualities and low cost of rubber and plastic printing plates so do more and more molders ask for Lake Erie ACRAPLATE Presses. ***Today, over 400 ACRAPLATE Presses are in operation ... more than all other makes combined.***

Such preference was to be expected. Since 1936 Lake Erie engineers have devoted their skill to the design and building of plate making equipment which could be depended upon to work efficiently with all available rubber and plastics materials. No other manufacturer can offer similar equipment supported by such a broad experience.

There is an ACRAPLATE model to answer specific requirements for production volume, type or size of jobs going through any plant.

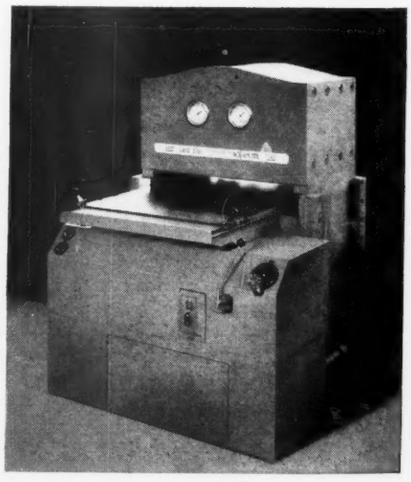
MODEL 55—Developed for plants having requirements for higher pressures than are needed in usual plate work and for limited mat molding. 550 tons, 31″ x 25″ platens.

LAKE ERIE ®

SEND FOR ACRAPLATE BULLETIN NO. 350

and other factual literature proving the economies and better results to be had with plates molded on Lake Erie ACRAPLATE presses. A Lake Erie representative will gladly discuss with you more fully, the superior features of ACRAPLATE presses, which assure better printing plates.

LAKE ERIE
ENGINEERING CORP.
BUFFALO, N.Y. U.S.A.



MODELS 18, 27 (illustrated) and 32—Similar, except as to tonnage and platen area. These models cover the widest range of work requirements. Model 18—180 tons capacity with 24″ x 20″ platens. Model 27—270 tons with 31″ x 25″ platens and Model 32—320 tons with 36″ x 28″ platens.

ACRAPLATE ®

LAKE ERIE ENGINEERING CORPORATION

General Offices and Plant: **568 Woodward Avenue, Buffalo 17, New York**

● Leading manufacturer of hydraulic presses — 3,500 designs from 5 to 23,000 tons capacity — stereotype molding ... plastics molding ... laminating ... die sinking ... metal working ... forging ... metal extrusion ... waste wood and plywood ... rubber vulcanizing ... special purpose.

Patents

For The GRAPHIC ARTS

Covering patents issued June 5, June 12, June 19, June 26.

All new patents for the Graphic Arts are reported exclusively for Printing Equipment Engineer by Invention, Inc., an industrial patent research organization in Washington, D. C. Invention, Inc., presently has the only staff in the country that examines, in the U. S. Patent Office, the complete printed copy, drawing by drawing and page by page, every one of the several hundred new patents issued each week. Printing Equipment Engineer is the only trade publication in its field offering a report based on this complete coverage. For copies of the patents listed here specify the patent numbers and send 25c for each separate patent, or 10c for each trade mark or design patent (stamps not accepted) to the Commissioner of Patents, Washington, D. C.

Composing Room Equipment

2,557,286. TYPOGRAPHICAL CASTING MACHINE has the usual reciprocable pump plunger from which a rod rises. The rod carries a two-armed spring-urged lever, one arm being free of the rod and carrying a cam follower. A rotatable cam has a track for the follower and acts through the two-armed lever and plunger rod to control the working and return strokes of pump plunger. This patent pivots an upright strut to plunger-rod-connected-arm of lever and supports the lever normally against the tension of spring with the cam follower on its second arm out of engagement with the cam track on the rotary cam. Lower end of strut is normally fixed and mutually engageable members carried by the rotary cam and the pivoted strut are momentarily engaged during cam rotation for swinging strut about its pivot. Invented by John H. Hilpman, Springfield Gardens, N. Y. Assigned to Mergenthaler Linotype Co., Brooklyn, N. Y. Application Nov. 2, 1948. 5 Claims.

2,557,705. TYPOGRAPHIC MOLD is for casting printers' types. It is provided with a vent or passage for the escape of air from the mold cavity and entrance-gate cavity. The vent is so located and designed as to result in the production of types of greater solidity and strength and having perfect feet. The mold shown is for use with a typographic casting machine produced by Lanston Monotype Machine Co. Invented by George H. Stryker, Philadelphia, Pa. Assigned to Lanston Monotype Machine Co. Philadelphia, Pa. Application Nov. 19, 1948. 2 Claims.

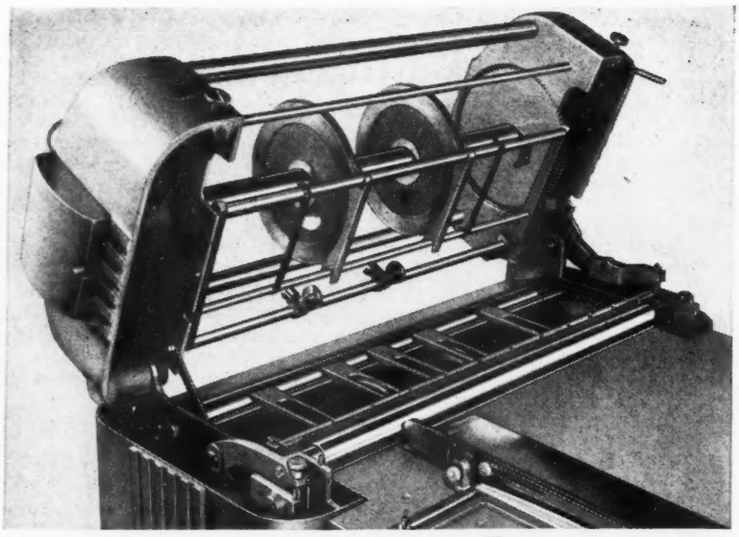
2,557,821. COMPOSER'S STICK. An attachment for a composer's stick allows the space remaining after the setting of a line of type between the end of the line and the end wall of the stock to be accurately determined. This again allows the spaces needed for justifying the line to be inserted by a simple process of calculation. Invented by Arthur L. Gagne, San Francisco, Calif. Assigned to Space Calculator System, San Francisco, Calif. Application Mar. 5, 1948. 5 Claims.

Feeding, Folding, Delivery

2,555,913. APPARATUS FOR REGISTERING SHEETS. Sidelay mechanism is provided for a sheet feeding machine. The mechanism comprises a base plate, a side registering gauge, a draw-blade or bar, a drop-roller, a smoother and their actuating parts, all built up as a self-contained unit which rests upon the layboard or front plate. The unit is bodily adjusted across the width of the machine without modification of the surface of the layboard. Invented by Headley T. Backhouse, Wentworth, England. Unassigned. Application August 14, 1947; in Great Britain April 1, 1943. 4 Claims.

2,556,787. REGISTER CONTROL FOR WEB FED CASEMAKING MACHINES. Apparatus permits the use of preprinted or prestamped case material in the manufacture of hard casings for books. A register control is provided that will dispense with manual adjustment during operation and will insure the desired positional deposition of the cardboard cover elements on a web of preprinted or prestamped case material. An electronic control is responsive to a comparision of a plurality of control points and is disposed to operate a Servo system, mechanically linked to the various elements to make the desired adjustments necessary for continual register during operation. Invented by Emmon Bach, Scarborough, John P. Gratiot, New York, Owen L. Gore, Douglaston, N. Y., and Garrett B. Linderman, Jr., Washington, D. C. Assigned by mesne assignments, to The de Florez Co., Inc. Application Feb. 12, 1949. 13 Claims.

TINGUE
TRADE MARK
PRINTING PRESS BLANKETS
TOPS in precision
press packing...
Check this complete line of press packing which offers the proper gauges or combination of gauges for every press condition.
COMBINO — An extremely durable clean printing laminated blanket. Gauges .062", .083", .093".
"TINGUE" COATED FELT — For those who prefer a softer packing. Gauges .083", .093".
UNCOATED WOOL FELT — Gauges .063", .072", .083".
TOP Drawsheet is firm, durable, economical and of long life. Gauges .016", .025", .030".
GOLD TYMPAN Drawsheet—An old favorite for flat bed presses. Gauge .012".
IMPROVED SATISFACTION—A fabric impregnated with "Neoprene" and coated with "Calvaprene." Gauges .024", .026".
STERLING—The latest plastic drawsheet. Gauge .025".
CUSHION CORK* — A highly resilient underpacking. Gauges .059" to .085".
TINGUCORK* — Much firmer than "CUSHION CORK" and preferred where precision plates are available. Gauges .032", .055" to .086".
KORKER* — Under Blanket for older type presses or where an unfavorable mechanical condition exists. Gauges .058" to .070".
FOUNDATION—A firm, durable oilproof under packing laminated by duPont with "Neoprene'. Gauges .032", .040", .053" to .085", .120".
TINGUE, BROWN & CO.
723 E. Washington Blvd., Los Angeles 21, Cal. PRospect 6023
507 Bishop Street, N. W., Atlanta, Ga. ATwood 3864
1227 Wabash Avenue, Chicago 5, Ill. HArrison 7-0083
1765 Carter Avenue, New York 57, N. Y. CYpress 9-8800
CANADIAN SALES AGENTS ROSS WHITEHEAD & CO LTD., MONTREAL, CAN



THE *Rosback*

PONY *Vari-Speed* ROTARY

PERFORATOR

"Eats Up" Perforating Jobs

- **2-10 Sheets per lift**
- **Up to 30" x 30" Stock**
- **Continuous Perforating**
- **Strike (or Skip) Perforating**
- **Variable Speed Drive**

For little more than the price of a vertical power perforator of similar sheet-size capacity, you can put the Rosback Pony *Vari-Speed* Rotary Perforator to work in placing your perforating on a modern, fast, low-cost production basis.

The Rosback Pony Perforator does round hole perforating—the type of perforating most satisfactory to most customers, as proved over the years. You can perforate two to ten sheets at a time—cutting costs to half or less as compared with perforating on any vertical or slot rotary perforator.

Operation of the machine is quickly learned because of the *Variable-Speed Drive*. A convenient handle on the front readily selects the desired speed, from 24 to 48 r.p.m. Any operator can feed the Pony *Vari-Speed* Rotary —even on strike work—and increase her speed as she gains proficiency. Experienced operators can obtain full production right at the start.

The fundamental principle of all Rosback Round Hole Rotary Perforators —proved by more than 30 years' of continuous use—is incorporated in the Pony *Vari-Speed*. The refinements and conveniences in the operation of this machine make it the leader in modern perforating equipment. See your nearest Rosback dealer, or write us for complete descriptive folder.

F. P. ROSBACK COMPANY • *Benton Harbor, Mich.*

LARGEST PERFORATOR FACTORY IN THE WORLD

2,558,685. SHEET GATHERING MACHINE uses numerous sheet pile stations for receiving stacks of paper and a back sheet pile station and a corresponding number of sheet receiving trays. A movable crosshead moves over all pile stations and trays. Suction cups on the crosshead register with each station and tray. Conduits lead from each suction cup to valves which may be selectively operated to lift and transfer sheets from one place to another. Invented by Henry T. Honig, Dallas, Tex. Unassigned. Application Apr. 15, 1946. 4 Claims.

Miscellaneous

2,558,212. PAPER COUNTER includes a base for supporting a pile or stack of sheets of paper. A sheet counting and batch spacing unit is provided with counters and is movable to insert the counters simultaneously into the stack of sheets for dividing it into separate batches and for spacing the batches sufficiently to enable cardboard backs to be readily inserted so that a cardboard back may be placed beneath each of the batches for subsequent binding or fastening of the sheets to the back. The counters are arranged in a vertical series and have projecting fingers tapered in thickness so that when the fingers are fully introduced into the stack of sheets, the divided batches will be separated to enable the cardboard backs to be arranged beneath each of the batches. Invented by Luther W. Evans, Richmond, Va. Assigned to Evans Specialty Co., Inc., Richmond, Va. Application July 14, 1945. 12 Claims.

Plate Making

2,555,874. PHOTOLITHOGRAPHIC PLATE INKING, DRYING, AND DEVELOPING MACHINE. The machine will rapidly ink, dry and develope photographic press plates in one continuous operation without requiring the operator to touch the plate, thereby overcoming the objections associated with the hand inking and developing of such plates. Plate is moved through machine by power operated means to inking, heating, and developing means arranged in sequential order for the proper treatment of the plate. Invented by Harry A. Coughlin, St. Louis, Mo. Assigned to John S. Swift Co., Inc., St. Louis, Mo. Application Dec. 23, 1946. 9 Claims.

2,556,550. HEAT SENSITIVE PRINTING ELEMENT and method produces color reproductions where only 1,000 or 2,000 prints are required. The method comprises filling with ink a line of juxtaposed capillary orifices in a solid block, each connected to a fluid-filled cell. The cells are also in line. A line of a negative of the picture is illuminated in printing relation to the line of cells, the cells are exposed by light from the line of the negative to heat the cells and cause expansion of the fluid and emission of ink from the orifices. The emitted ink is received on an ink receptive support. The capillary orifices are periodically replenished with ink while synchronously scanning the negative by the line which exposes the cells and the support by the line of orifices. Invented by Alexander Murray, Rochester, N. Y. Assigned to Eastman Kodak Co., Rochester, N. Y. Application Feb. 27, 1947. 5 Claims.

GOING LIKE *wild-fire*

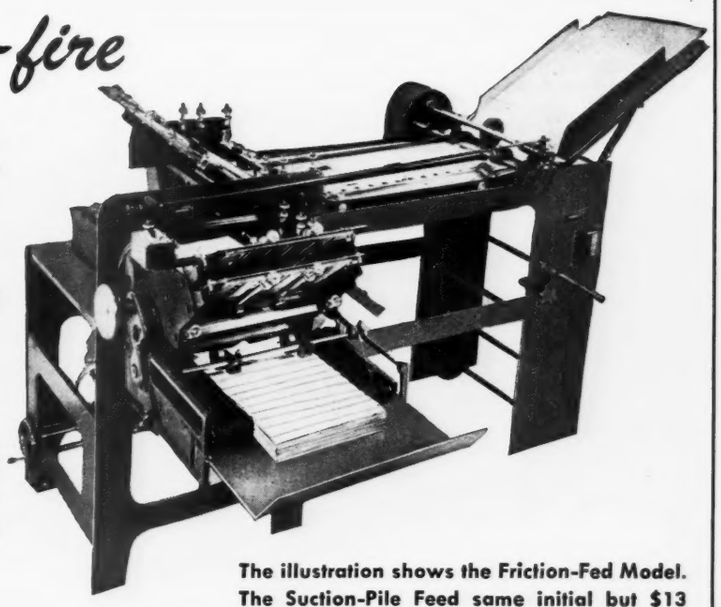
Fast as they can be shipped... over 600 in recent months... in April every business day five or more Printers and/or Bookbinders ordered the

New Junior 17x22 FIVE-FOLD Automatic BAUMFOLDER... Goldmine

Only $85 *initial and $40 per month for 30 months.*

It's a many-purpose, many-PROFIT 5-fold automatic folder... automatic rotary cutter (cuts out bleed trims and end trims WHILE folding)... automatic scorer... automatic PERFORATOR (accurate to a hair, end to end).

Five folding plates... 60 different styles of folds... 4 pages to 24 pages in one operation. Folds thinnest bible stock or onion skin. Perfection in accuracy... no less. Production that creates GOLDEN profit... has broken through the "ceiling" that paper can travel automatically... the ultimate in production (profit). It will pay for itself over and over long before you pay for it.

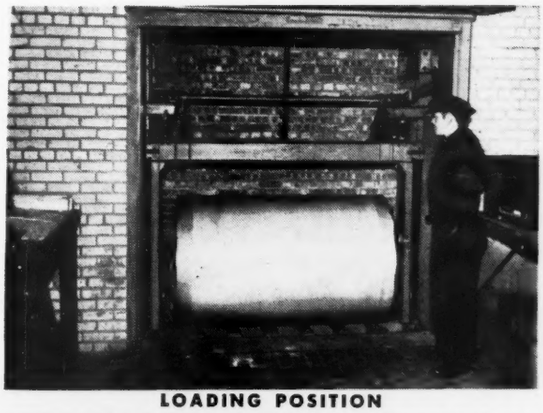


The illustration shows the Friction-Fed Model. The Suction-Pile Feed same initial but $13 per month additional.

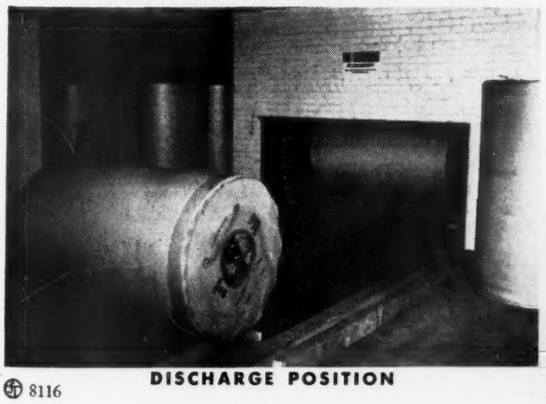
RUSSELL ERNEST BAUM INC.

615 CHESTNUT STREET
PHILADELPHIA

The South Bend Tribune



LOADING POSITION



DISCHARGE POSITION

8116

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Nothing else solves the problem of moving heavy, bulky rolls of newsprint from truck to press room or storage quite so smoothly and effectively as a Gifford-Wood Pneumatic Drop such as the one shown, recently installed in the new South Bend Tribune Building, South Bend, Ind.

This Gifford-Wood unit lowers 1900-lb. rolls 5'6" long and 3' in diameter through a 15' drop smoothly, safely, pneumatically. The roll is fed onto the lowering carriage where it is dropped to the basement and automatically discharged. Speed of the carriage is controlled by a valve system and return of the carriage to load position is fully automatic.

Design of the Gifford-Wood Pneumatic Drop makes it the most economical lowering unit ever manufactured, as well as the most practical way of eliminating damage to newsprint and employee working hazards.

G-W ELECTRIC HANDLING UNITS FOR RAISING AND LOWERING ROLLS

A Gifford-Wood engineered, conveying, or elevating system will speed the moving of paper stock, magazines, mail sacks, stereos and many other items through your plant. Why not consult a G-W engineer today? There is no obligation.

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WHEN YOU THINK OF MATERIALS HANDLING... THINK OF GIFFORD-WOOD

2,556,626. ALUMINUM is etched by applying a solution containing cupric chloride, glycerine and orthophosphoric acid to an aluminum sheet supporting local resists. Invented by Charles E. Meulendyke, Rochester, N. Y. Unassigned. Application May 19, 1949. 1 Claim.

2,557,352. PRINTING STENCIL. This stencil is prepared by applying on a screen a suitable layer so as to fill the holes of screen and which is not sensitive to light, such as glue or gelatin, applying the design to be printed directly to this layer. The design is applied in inks, pigments, or drawing crayons. The screen is dried and the layer is then treated with a hardening or sensitizing solution of ammonium bichromate to render the stencil layer uniformly sensitive to light. The stencil is now exposed to strong light and developed with warm water. During this developing, those parts of the stencil covered by the design are not affected by the exposure and are dissolved, and the design adheres to such parts and is removed from the stencil to leave screen holes forming a registering design. Invented by Georges Kanitz, Caracas, Venezuela. Unassigned. Application Apr. 19, 1947. 6 Claims.

2,557,561. PLATE POWDERING MACHINE. Improved mechanism is provided for mechanically applying powdered resin to the initially etched face of a halftone or line photoengraving. The plate is mounted on a rotatable carrier which carries the plate through the machine while the various operations are performed on the plate. The carrier is mounted on a conveyor chain so as to hold the plate always in a horizontal position. The carrier passes through the machine four times and is rotated one-quarter turn after each passage so that a different edge of plate is presented as the leading edge on each passage of the carrier through machine. Dragon's blood is applied to plate, surplus powder is removed. Gas burners directed downward toward etched plate melt the resin. Plate is cooled by a liquid spray and high velocity air removes liquid from plate surface. Invented by Frank T. Powers, sr., deceased, late of Glen Cove, N. Y., by Frank T. Powers, jr., Locust Valley, and John M. Powers, Glen Cove, N. Y., executors. Assigned to Powers Photo Engraving Company, Glen Cove, N. Y. Application Sept. 30, 1948. 15 Claims.

Engraved on Imperial Zinc

"ROUGH" ETCHING

• An undesirable quality called "rough" etching sometimes results when a flat is overheated while "burning in." Overheating causes excessive and irregular crystal growth in the plate, often evidenced by a galvanized appearance. This in turn results in surface irregularities which pick up powder, causing rough etching and dirty bottoms.

★ ★ ★

Users of Imperial Register-Redibak keep such difficulties to a minimum because Imperial Zinc is especially treated in the manufacturing process to prevent excessive crystal growth.

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2,558,269. PLASTIC PRINTING PLATE for rotary letterpress printing is operable at high printing speeds, has extremely long life and can be rapidly and economically produced. The surface of a matrix is covered with a powdered, thermoplastic, unfilled and transparent vinyl resin. The unfilled vinyl resin is covered with at least one sheet of a filled vinyl resin. The thickness of the filled vinyl resin section does not exceed the thickness of the unfilled vinyl resin section. When cured, the vinyl resins are flexible, somewhat resilient, and abrasive resistant. The resins are molded under pressure at 210 to 240 deg. F. to integrally unite the two layers of vinyl resin. The printing plate is bent at 150 to 180 deg. F. and adhesively secured to a thicker member made of duralumin while the plate is warm and flexible and is allowed to set while pressed against the member. Invented by Edward H. Reilly, Westport, Conn. Assigned to Electrographic Corp., New York, N. Y. Application Oct. 3, 1945. 1 Claim.

2,558,504. A METHOD OF PRODUCING A PRINTING FORM HAVING A BIMETALLIC SURFACE for planographic printing is shown in which an etching agent is used without removing zinc and cadmium. It comprises covering parts of a layer of a metal selected from the group consisting of copper and tin, which layer is on one surface of a metallic base which is water-receiving and ink-repellent in a planographic printing process, with a resist. A metal from the group consisting of zinc and cadmium is deposited onto those parts of the layer not covered by the resist. The resist is selectively removed to leave the underlying portions of the layer exposed. The thus exposed portions of the layer are removed with a sulphide-forming etching agent, leaving the remaining parts of the second layer. Invented by Claes B. Aller, Copenhagen, Denmark. Unassigned. Application Aug. 1, 1947; In Denmark, Mar. 12, 1946. 7 Claims.

Printing Inks

Reissue 23,382 of 2,482,879. STEAM-SET PRINTING INK. The vehicle consists essentially of a dispersion of a binder, a protein peptizing agent and an anhydrous hygroscopic liquid. The binder consists of a dry, anhydrous, non-prolamine protein having high water

tolerance and is dispersible in nitrogen base material. The protein is dispersed by the action of the peptizing agent. The liquid consists essentially of a polyhydric alcohol having 2 to 3 hydroxy groups and 2 to 8 carbon atoms. The printing ink vehicle has a high humidity and water tolerance and is readily settable on exposure to steam. Invented by Alfred F. Schmutzler, Teaneck, N. J. and Donald F. Othmer, Coudersport, Pa. Unassigned. Original application Sept. 27, 1949; for reissue Sept. 22, 1950. 21 Claims.

Printing Presses and Equipment

2,555,319. TYMPAN MATERIAL is adapted to be mounted upon an impression cylinder or tympan roll and to support a sheet to be printed upon. It comprises a flexible base having good resistance to shear and tension and a planar surface supporting the sheet to be printed upon. Such surface is formed of a layer of small rounded glass beads set in an adhesive adapted to cushion the sheet to be printed upon under printing pressure. The bodies are arranged to define interspaces below the sheet to be printed upon for reception of ink transferred from the sheet during the printing process. The adhesive is resistant to softening under conditions of use and is inert to printing ink. Invented by Bert S. Cross, St. Paul. Minn. Assigned to Minnesota Mining & Mfg. Co., St. Paul, Minn. Application Aug. 17, 1944. 15 Claims.

2,556,511. PROCESS FOR MAKE-READY, for color printing on cylindrical presses, comprises taking an impression of images on a draw sheet which is forced against an image containing cylinder, placing the draw sheet on a number of plies of paper to form a structure, and correcting image inaccuracies by building up or removing sections of the plies. The press cylinder has a shrink sheet and a layer of packing sheets, the latter being attached by spindles which lie across a recess below the rim of cylinder and are perpendicular to press cylinder axis so that sheets attached to spindles are curved about the recess edge as they are mounted about the rim. Shrink sheet is removed and one or more packing sheets are replaced with sheets containing the corrected image. The shrink sheet and corrected image sheets are folded over edge of recess and about cylinder in exact register. Invented by Earl H. Affolter, Chicago, Ill. Unassigned. Application Apr. 21, 1949. 4 Claims.

2,556,251. CYLINDER DRIVE FOR BED AND CYLINDER PRINTING PRESSES. The cylinder, rotating with relation to bed, is on a shaft which is driven by a variable crank drive including a member mounted for rotation about an axis spaced from but parallel to the cylinder shaft axis. A pin carried by the drive moves radially thereof and a driven gear is mounted coaxial with the cylinder for rotation with same. Pin is connected to driven gear at a point spaced from the axis of such gear, and an additional gear is mounted coaxial with cylinder and is carried by same for movement toward and away from the bed. There is a driving connection between gears to permit movement of cylinder, such connection comprising a pair of pinions. Invented by A. F. Bell, Marietta, O. Assigned to W. G. Montgomery, Marietta, O. Application Dec. 10, 1947. 3 Claims.

2,556,474. BOOK EDGE PRINTING APPARATUS. The printing element or plate used for imprinting the edges of a bound book is a flexible tough sheet of paper or fibre having one surface coated with gelatin to receive a design in multicolor hectograph inks. The apparatus is adapted to receive this plate in a bent position so as to fit the three edges of a bound volume. Thus the three edges are printed simultaneously. The apparatus further provides for clamping a book to be printed and for moving the book into printing engagement with the plate. Invented by Nathan A. Hurwitz, Chicago, Ill. Assigned to Book Production Industries, Inc. Chicago, Ill. Application June 28, 1946. 12 Claims.

2,556,678. POSITIVE CLUTCH AND LOCK. Clutch driving construction is particularly useful in the main drive of a printing press. The clutch has means for effecting a positive lock of the coupled parts in driving position, and also for effecting a similar positive lock when the clutch is in the uncoupled or silencing position. Clutch has an internal or ring gear connecting two spur gears of equal numbers of teeth and diametral pitch. The internal gear which connects the driving and driven spur gears is axially slidable lengthwise of the driving and driven shafts so as to couple and uncouple the spur gears. A toothed locking ring is used to block internal gear from

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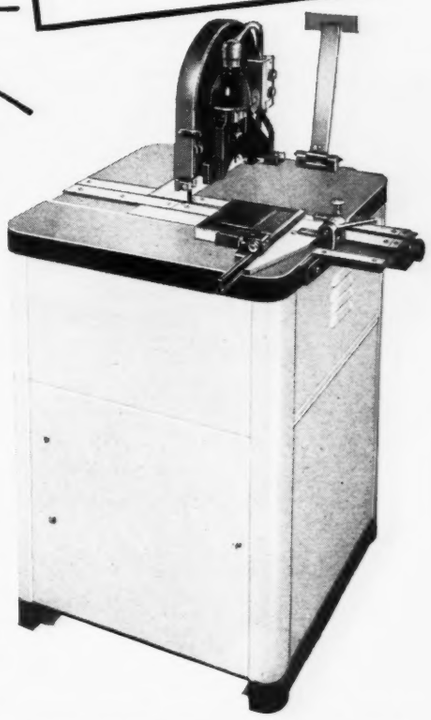
NEW

Rouse



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COMPLETELY ELIMINATES ALL squaring up, guesswork alignment, tacking, scoring, beveling, trimming, removing burrs, and use of wedges. All edges are finished smooth. You make only four quick, easy, automatic saw cuts and the plate is ready for the printer.

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Outside Mortising effectively done to pica and point measurement.

Equally effective on copper, zinc, or plastic plates, whether wood or plastic mounted or shellcast.

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sliding movement. Invented by Curtis S. Crafts, Oak Park, Ill. Assigned to The Goss Printing Press Co., Chicago, Ill. Application Mar. 1, 1945. 10 Claims.

2,557,381. MULTIPLE UNIT PRINTING PRESS. This is so constructed that different types and different members of printing units and inking units can be selectively used in a standardized frame. In this way, the press may be used for pressure printing or electronographic printing without pressure either by direct or offset printing processes and it can be readily adapted to print one or more colors on one or both sides of a web of paper during a single run-through of the web. It is adapted to print on paper, film, textile, metal or cardboard. Invented by William C. Huebner, New York, N. Y. Unassigned. Application Aug. 9, 1946. 11 Claims.

Emergency Ink Roller Repair

IT sometimes happens that a composition ink roller will crack on the job and there is no other roller with which to replace it. That happened to John R. Brougher, owner of the T-P Print Shop at Calvert, Tex., with the result that he devised a way to keep the roller in service so he could finish the job.

The job was on a cylinder press. He cut a length of auto tire inner tube and pulled it sleeve fashion over the ink roller. The sleeve covered the break. The inner tube sleeve being slightly smaller than the inking roller held it together, thus preventing further damage. The inner tube being rubber will take ink and the slight difference in diameter of the ink roller where the inner tube sleeve comes is not sufficient to make much different in the ink distribution on the form.

Since doing this on a cylinder press, Mr. Bougher has also done it with a jobber, in this case using wide rubber bands a trifle smaller than the ink roller.

Makes Letters for Numbering Machines

IN running numbered form jobs letter characters sometimes are used instead of the abbreviation for No. To do this, however, it is necessary to have a complete alphabet otherwise just the letter desired may be lacking. C. H. Reynolds, Superintendent of the State Commercial Printing Co., Columbia, S. C., casts the letters on a Ludlow. Any 18 pt. face that can be set on a Ludlow can be used. Then the shank of the Ludlow slub is cut off. This leaves the upper part of the slug with the letters on a thin base measuring about 10 pts. high.

With a three cornered file a slight groove is filed in each side of the slug. Then on the bottom of each letter he files a notch at right angles to the letter. This permits the numbering machine plunger to engage the bottom of the slug to prevent slippage. The metal in the Ludlow slug is soft enough so that this filed letter can be pushed into the slide provided for the letter on the numbering machine plunger.

NPA
Printing and Publishing Division

MRO Regulation

CMP Reg. 5, issued and effective July 6, establishes new procedures for the use of priority ratings in the obtaining of maintenance, repair and operating supplies (MRO) and minor capital additions (MCA). The new regulation which is part of the Controlled Materials Plan revokes NPA Reg. 4 under which the printing industry previously was authorized to use the DO-97 rating to obtain these necessary materials.

The new regulation establishes the rating DO-MRO for obtaining non-controlled materials by businesses, agencies and institutions. It requires that an order calling for delivery after the third

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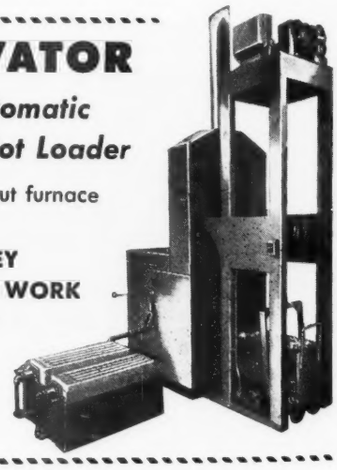

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Cracking and Pitting of Rollers

CRACKING and pitting of composition rollers on the ends may be traced to a number of causes. The washup is in most cases hurried. The most care is devoted to getting the working surface of the roller inside of the ends fairly clean while the ends are generally neglected. The result is that in time there is a slight accumulation of ink film on the ends. The film of ink shrinks as it dries faster than the roller can stand so it cracks. Some pigments like English vermilion exert a drying effect on the composition. Fast oxidation of bronze and Milori blues, chrome yellows and chrome greens draw moisture from the roller. If higher fatty acids are present, some chromium pigments can give off chromic acid which tans the roller. A safeguard against drying on the ends is to grease them with petrolatum and to make sure the ends are washed as clean as the rest of the roller at all washups. This is a strong argument for the roller washing machine.

Sometimes a roller should be wiped with a damp rag after washup with the ordinary detergents to remove film of scum. The rag should not be sloppy but just damp so that no beads settle on the roller.

quarter, 1951, placed prior to the effective date of the regulation and bearing the DO-97 rating, must be converted in accordance with provisions of CMP Reg. 3.

Under CMP Reg. 5, a person who applies for materials using the MRO symbol or the DO-MRO rating, must establish his quarterly MRO quota. Capital expenditures are not included. A person who establishes a quarterly MRO quota in excess of $1,000 shall within 30 days notify NPA in writing of the quota established, the base period used, the method of computing the quota and the corrections made for seasonal or other factors.

It permits a person not operating in any part of the calendar year 1950 to establish the MRO quota necessary for his operation. If the quota exceeds $5,000 during any quarter he must have written approval of NPA. The regulation exempts persons who order during any quarter MRO and materials for minor capital additions aggregating not more than $1,000. It also exempts persons who use the MRO symbol and the DO-MRO rating to order, during any quarter, materials which aggregate not more than 20 percent of his MRO quota for such quarter.

Inks, Powders and Foils Affected

Inks, powders and foils of bronze, copper or aluminum are affected under NPA Order M-47A. The new order covers end-products which do not at the present time come under the Controlled Materials Plan. It contains two lists of products, an A list and a B list. For products in the A list, the following percentages of base period use are permitted: iron and steel products and parts, 70 percent; copper products and parts, 60 percent; aluminum products and parts, 50 percent. The base period is the first six months of 1950. For products in the B list the following percentages of base period use are permitted: iron and steel products and parts, 85 percent; copper products and parts, 80 percent; aluminum products and parts, 75 percent. The base period is the first three months of 1951.

The order, which became effective July 1, takes the place of M-47 for iron and steel, M-7 for aluminum, and M-12 for copper. M-47 and M-7 will be revoked, and M-12 will be amended to reflect the transfer of some of its provisions to M-47A. The new NPA order transfers the point of control of copper and aluminum consumption from the fabricator to the firm which manufactures or assembles the end-products.

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What To Do *when changing plate and press equipment for narrower width newsprint rolls outlined by R. Hoe & Co.*

PRESENT newsprint prices and the possibility of price increases have caused newspaper production and mechanical executives to meet their firms' newsprint costs by reducing paper roll widths. Quite a few inquiries from newspaper executives have been received by R. Hoe & Co. with respect to the changes which will have to be made in composing room, platemaking and press equipment to facilitate use of the narrower width rolls.

There are no special rules or procedures that can be followed. The reason is that variables exist from plant to plant. The requirements for equipment alterations existing in one plant may not exist in exactly similar manner in another plant. Differences in equipment also enter into the matter. These variables must be analyzed before anyone can determine just what must be done or how much it will cost to make the changes. It is necessary to investigate form lockup, column rule thickness, stereotype mat shrinkage, width of press plate clips, degree of bevel, etc.

Every equipment alteration job should be handled individually. The press manufacturer, the manufacturer of platemaking equipment and the stereotype mat representative should be consulted. However, an outline of the necessary procedure has been prepared by R. Hoe & Co. It is as follows:

To illustrate, we will assume that the width of the paper roll now being used is 66 in. and it is desired to reduce the width to a 64 in. wide roll. Mat shrinkage is one of the most important considerations, since the printed page, when using a 64 in. wide roll must be approx. 15 3/16 in. to allow white margins of approx. 13/32 in. The mat representative should be consulted to make sure that high shrinkage mats are available.

It is necessary to determine whether the type matter in the form is to be 8 col., 12 pica cols., with 4 pt. col. rule which is 16.324 in., or 8 col., 12 pica cols., with 3 pt. col. rule which totals 16.226 in.

When using 4 pt. col. rule, it is necessary to shrink the mats approx. 1 1/8 in., and when using 3 pt. col. rule it is necessary to shrink approx. 1 1/16 in.

Unless new chases are ordered, or the existing chases are already arranged to lock up 8 col., 12 pica cols., with 4 col. rule, or 8 col., 12 pica cols., with 3 col. rule, it will be necessary to supply filler pieces for the chases.

The molded high shrinkage mats must be pre-shrunk after which the mat is backed and then placed in the drier or former for the final shrinkage prior to being placed in the plate casting equipment. It is important that the amount of shrinkage is consistently the same so that the dead metal bolster on the beveled edges of the finished plate is always the same and is evenly divided for uniform white margins of equal width.

Changes in plate casting and finishing machinery must next be considered, but no fixed rules can be laid down as to the changes required. The manufacturers of the platemaking equipment in each instance should be consulted.

In the press itself, it is necessary to check and make the usual following changes:

The press clips and center rings should not be more than 11/16 in. across the sharp corners and should be 5/16 in. high to obtain 13/16 in. center margins and 13/32 in. outside margins.

Angle bars should be adjusted.

The drag roller pulleys over the former and slitter roll pulleys need adjusting.

For a tabloid product, move slitter on roller over the former.

Move and adjust propeller rollers.

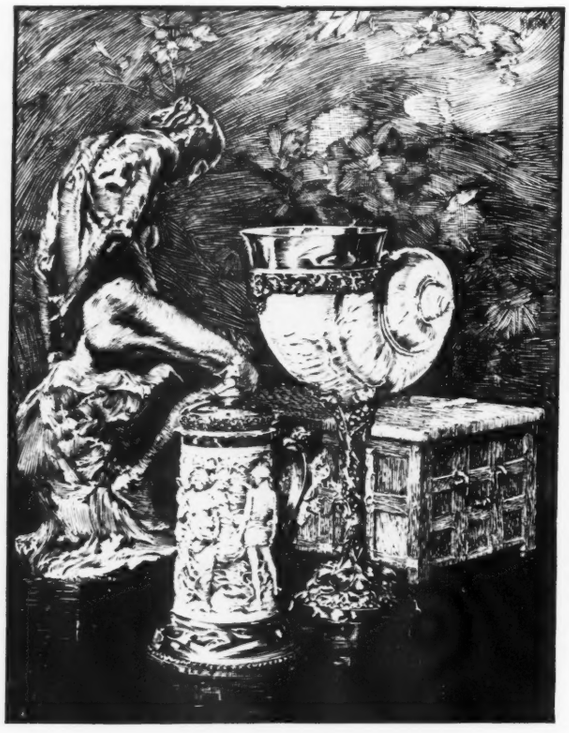
Move former carriage.

Move bearers on nipping and folding rollers.

Check location of pin holes in folding cylinder and drill new holes if necessary.

Check location of pin holes in cutting cylinder and drill new holes if necessary.

Cut clearance for pins in knife boxes.



Engraving and Fine Art...

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(The above is the actual engraving by George Sahagian of Boston which won the highest award in the Zomo Contest some years ago.)

ZOMO ELECTRIC ZINC ◆ A-Z ELECTRIC ALLOY

Check clearance for pins in rubber boxes.

Close down the end screws in ink pumps.

Check clearance for pin points in folding rollers.

It is advisable to check with the press manufacturer who will gladly furnish complete details as to changes required. It is desirable to give the manufacturer the serial number of the press as well as the platemaking equipment which will have to be altered, the angle of bevel of the press clips, the present width of the form and also the width of the printed page, the present width and height of center rings and also the widths of the paper roll now used and contemplated.

Herman A. Peterson, Vice President of Intertype Corporation, has been made a member of that firm's Board of Directors. Peterson has been Comptroller of Intertype since 1927 and Vice President since 1937.

J. W. Lee, Vice President of the Challenge Machinery Company, is making a six-week tour of England, Sweden, Belgium, France and Switzerland. Throughout his trip, Mr. Lee will contact European distributors of Challenge printing machinery and equipment. Accompanied by his wife, Mr. Lee sailed aboard the Queen Mary, June 15, and will return early in August aboard the Queen Elizabeth.

At the annual stockholders' meeting of the Lanston Monotype Machine Co., held on June 28 William H. Walling was elected to the Board of Directors. He is Chairman of the Board of Rogers Kellogg Stillson, Inc., Lithographers, located at 207 W. 25th St., New York, N. Y. He is a director of Publishers Printing Co., and serves officially with Graphic Arts groups.

EXECUTIVE Cs

Harry G. Willnus, Vice President of Intertype Corporation, has been elected Executive Vice President of that company, according to President Neal Dow Becker. Willnus joined Intertype in 1916 and has held various executive posts since then. He has been a member of the Board of Directors since 1941.

Frank G. Betlock has been appointed Manager of the Miller Printing Machinery Co.'s San Francisco Branch located at 427 Russ Bldg. Betlock will be in charge of sales and service of Miller products in Northern California and the Pacific Northwest. He formerly was Miller representative in the St. Louis territory.

Robert C. Nicholson, acting editor of *The Linotype News* for the past year, has been named editor. He joined the Mergenthaler Linotype Co. in 1950 as assistant editor of the magazine. An experienced printer, Mr. Nicholson spent several years as a Linotype operator in various Ohio cities, principally Cleveland and Columbus. He is a graduate of the Ohio State University School of Journalism. He has helped redesign the formats of dozens of newspapers in the United States and Canada and has addressed press association groups on the subject of better newspaper makeup.

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TELETYPESETTER

Roger L. Perry has been appointed Sales Director of the Printers' Equipment Div., Hamilton Mfg. Co., Two Rivers, Wis., according to an announcement by H. G. Evans, Vice President in Charge of Sales. For the past two and a half years Mr. Perry has been field representative of the company, working with dealers and printers on equipment problems. Prior to that time he was with the University of Wisconsin and the Courier Pub. Co. of Waterloo, Wis. A graduate of the University of Wisconsin, Mr. Perry is married, a veteran of three years' service with the Naval Air Force and has been active in Junior Chamber of Commerce work.

Ray C. Cook, former sales director, Hamilton Mfg. Co. has rejoined the Western Newspaper Union, with whom he had previously been associated for 35 years. He will be Manager of the St. Louis Branch of Western Newspaper Union.

The name of the St. Cloud Photo Engraving Co., St. Cloud, Minn., has been changed to The St. Cloud Engraving Co., Inc. Principal stockholders of the new corporation are Jerry Scholen and Joe H. Lacher. New and larger quarters are now occupied by the company at 6th Ave. and 1st St. North. Jerry Scholen, for the past three years, has been in charge of the engraving division, Times Pub. Co.

The board of Directors of Gaetjens, Berger & Wirth, Inc. of Illinois has elected James J. Murray as Secretary, Herbert Gaetjens, President of the company, announced. Murray, a salesman with Gaetjens since 1947, has been in the ink field for 23 years. Besides Herbert Gaetjens and Mr. Murray, other principal officers of the company are Charles F. Gaetjens, Vice President and Frederick Weldon, Treasurer.

L. L. Norwich has been promoted to sales supervisor of printing accessories for Minnesota Mining & Mfg. Co. Announcement of his promotion was made by E. J. Kane, sales manager, printing accessories, reflective products division.

Edwin Matlock has purchased Retmier Studios, a printing plant, at 3307 Sutherland Ave., Indianapolis, Ind. Matlock was composing room foreman for the Indianapolis *Star* from 1944 to 1949. Later he became mechanical superintendent of the Mansfield (O.) *News-Journal* and associated Lorain (O.) *Journal*. Retmier Studios was established in 1947. In the new ownership, letterpress and offset work will be executed. The Studios will be incorporated with Matlock as President; his son, Dr. James F. Matlock as Vice President, and his daughter, Mrs. Katherine Boyer, as Secretary-Treasurer.

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Invitation

Production and mechanical executives are invited by the editor to submit informally in a letter details of devices and production helps which have been devised in their plants. Other executive readers will appreciate your helpfulness.

Gas at Least 36 Years

By W. F. SCHAPHORST, M.E.

MANY people are "afraid it won't last long." This writer has done some delving into the matter and he figures that, at the present rate of consumption, natural gas will last at least 36 years in the United States.

Proved reserves amount to 180 trillion cu. ft. But, 180 trillion doesn't mean a thing to most of us as a mere number, so the writer did some figuring and he finds that a gas tank large enough to hold 180 trillion cu. ft. would be 11.6 mi. high and 11.6 mi. in dia. How high is 11.6 mi.? It would take 61 Eiffel Towers, one on top of the other, to reach that high, and the Eiffel Tower is 1000 ft. high.

Mt. Everest, the highest mountain in the world, could easily be placed inside a tank 11.6 mi. high because Mt. Everest isn't half that high. Mt. Everest is only 5.5 mi. high. All of which should assist in calming any fears about natural gas "not lasting long". Don't worry about it any more.

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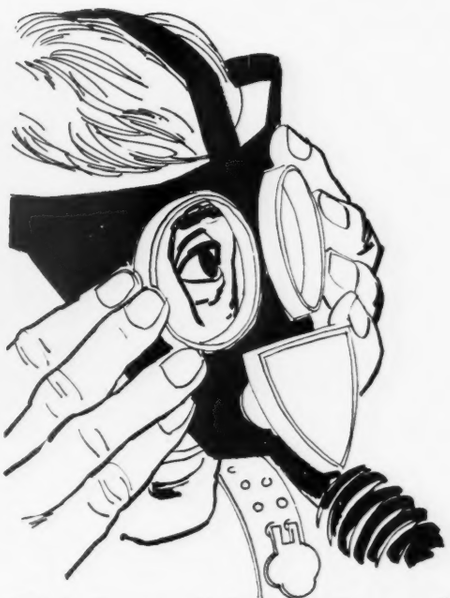

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Color in the Printing Industry— No More of that Drab Monotony In Interiors or on Machines

By DR. W. SCHWEISHEIMER*

**Rye, N. Y.*

THE important movement directed to introducing positive color into the interior of printing plants and industrial factories has gained force during the last few years. Underlying the actual process is probably an unconscious revolt against the aesthetic starvation imposed by old-fashioned plant interiors.

Colors on Machines

Some ten or more years ago it was a bold adventure when machinery makers in Britain were asked to paint all the machines light French gray because some clients preferred this to the normal black. French gray encouraged employees to keep the plant clean and also showed the amount of surplus oil in the bearings and other moving parts.

Today everywhere bright pigments take the place of the drab hues of past days. Color experts have found that workers are in a better mood and consequently more efficient when they are working in gaily painted surroundings.

In America the experiences of Ronald J. Cooke are proof for the psychological influence of colors on the working man. No more gray uniform-like monotony, but colorful surroundings and tools even in small print shops. Tests have shown that a new color scheme can increase production by as much as 15 per cent.

This increase of production may be much higher in special cases. An 80 per cent increase in output was achieved by a manufacturer merely by changing the color of the assembly tables on which girl workers assembled tiny, hard-to-see parts. The tables were painted a color complementary to that of the tiny parts. The latter became easily visible and the production curve increased.

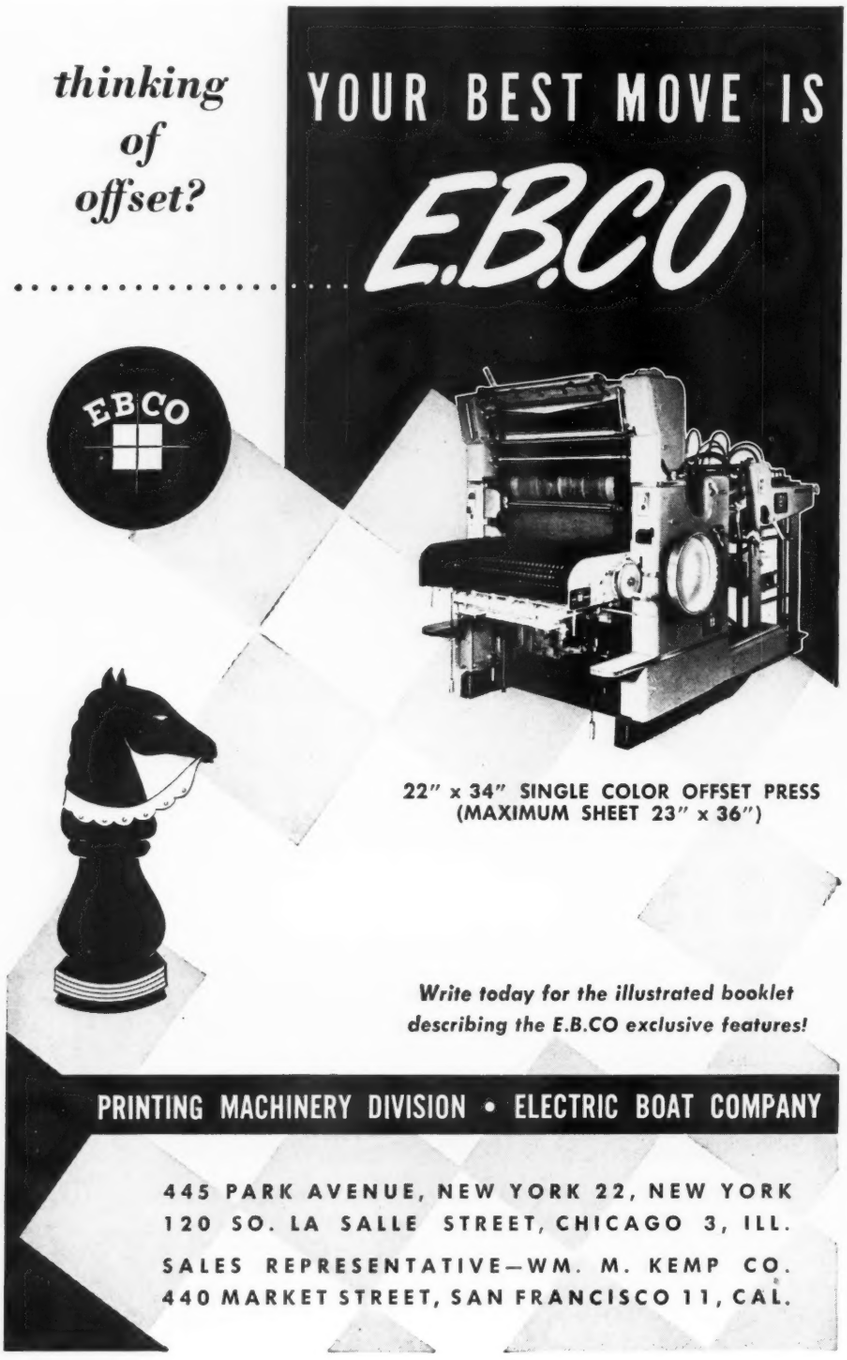
No Extreme Schemes

There is no reason to go to the extremes. Very colorful surroundings may be pleasant to the eye, but it is wise technique to let them be passive in order to avoid competition with the job. Faber Birren, nationally known expert in color technique, says wall tones in direct lines of vision should be held in pale hues having about 50 per cent reflectance. Tones very soft and grayish, preferably "cool" in quality, are recommended. If color is too rich or too vivid, the worker's attention may wander from the task.

Birren's prescriptions stress the need to keep machine colors only slightly darker or lighter than materials. Contrast should be effected through hue rather than extreme lightness or darkness. Soft grayish tans, he points out, will help build up sensitivity for the normally bluish cast of steel; soft grayish blue will heighten sensitivity for the orange cast of brass, etc.

An American industrialist, after having inspected the machine shops of a newly built plant, said: "Green machines—red table ledges—blue waste buckets—all you need is clothing the workers in purple like a cardinal." The plant management, however, showed him the budget of the newly decorated plant, including expenses for painting and modern equipment, as well as the statistical figures of the increase in efficiency since the change to gay colors. This convinced the manufacturer to make similar changes in his own plant.

Light colored surfaces serve several purposes in the printing plant. Allen D. Brandt, and Harry E. Seifert, two engineers, consider them of particular value in providing high utilization of light because light colored surfaces reflect more light toward the working areas. Bright window areas and artificial light sources are less uncomfortable to the eye when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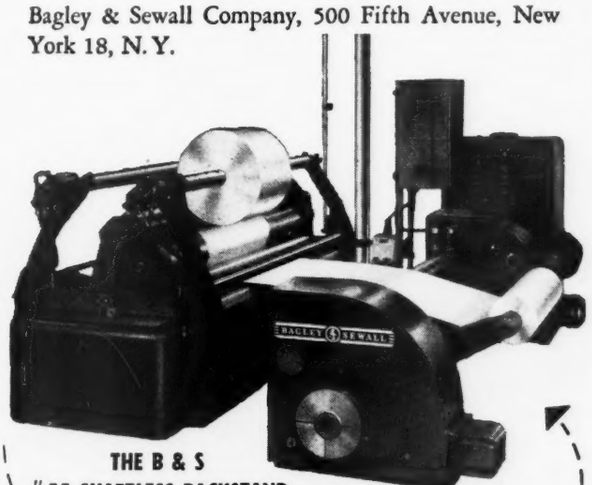

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viewed against a light background. Many progressive plants are painting their machinery with light-tinted durable paints. This provides an increased amount of light which is reflected to the otherwise shadowed sections of the machine.

Glare of Colors on Machines

Colors for machinery should generally have a reflection value of from 25 to 40 per cent. In a study of colors on machines in Britain it was found that there has been a notable trend in all new installations to use glazed bricks in gay shades and to paint lighter shades, even on older erections. The latest move in Britain is to paint the actual machinery in lighter shades, varying according to the success of experiments made from time to time.

Light restful colors have been found the most attractive from the worker's viewpoint according to British experiences, and the changes which have been made have been as much to rest the workers as to show up dirt. Anything assertive has been found to be hurtful to production and glaring colors are to be avoided.

It is obvious, according to reliable sources, that no uniform system or classification can be attempted since each particular industry has its own particular requirements: printing industry, steel industry, etc.

These requirements must be investigated individually to insure that the colors selected are not only restful and satisfactory to the workers but that they don't dislocate the processes by creating less contrast, or by disturbing the accuracy of shading which is necessary in some processes.

Colors for Industrial Safety

Faber Birren gives the following advice for using certain colors in industrial buildings for increased safety:

(1) Yellow, being the most conspicuous of all colors, should be used where hazards are critical, off-and-on switches, danger zones, low beams, moving parts, etc. Yellow should not be used promiscuously in meaningless places and thus be disregarded where danger may actually lurk. It may be number one in a system of color for safety.

(2) Orange may be given other jobs to do—curbing, rails, boxes, cranes, trucks, etc. Color may thus be employed for a specific rather than random impression on the worker. Yellow he watches with a wary eye; orange he knows must be respected.

(3) Red may logically be reserved for fire apparatus, fire doors, exit signs, lines etc., according to Faber Birren. This acceptance is today universal and should no doubt be preserved.

Planned use of colored surfaces will also help in improving the light utilization through reflection, and this may be important for both the efficiency of the workers and the whole employee morale in the plant. Modern industrial development has shown quite a few surprising factors that, for physical as well as psychological reasons, influence the efficiency of the workers and the level of production in a plant. Paint and color are one of these factors, and we have not yet reached the maximum of understanding and knowledge of their influence on the different branches of industry.

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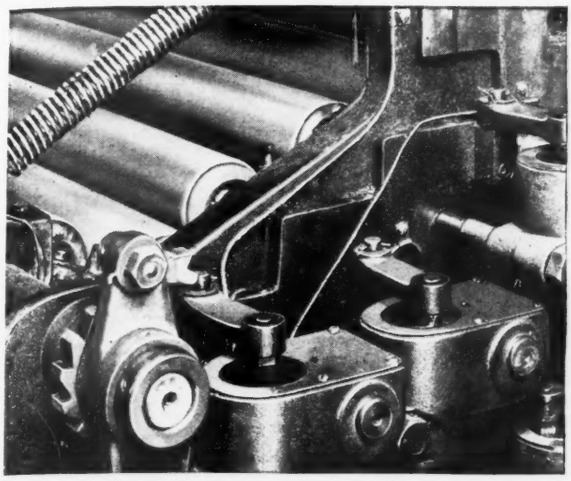
Persistent Gaskets

By W. F. SCHAPHORST, M.E.

Have you ever had trouble with gaskets that blew out repeatedly? You blamed the gasket and called it a "poor" gasket? This writer has had that trouble, and he learned an important lesson. He put in gasket after gasket and upon finishing each insertion said to himself, "This time I have surely tightened it tight enough so it will not blow out again".

But it did blow out again. And, finally, he decided that maybe the cap screw holes were not deep enough. So he proceeded to investigate. What did he find? He found that the holes were amply deep, but the bottoms were full of dirt, as indicated in the sketch. There was so much dirt in the holes that the cap screws were prevented from making the gasket tight even though it seemed to be tight. Upon removal of the dirt no more gasket trouble was experienced. The gasket was not at fault at all. All of which, again, proves the importance of cleanliness in mechanical work.



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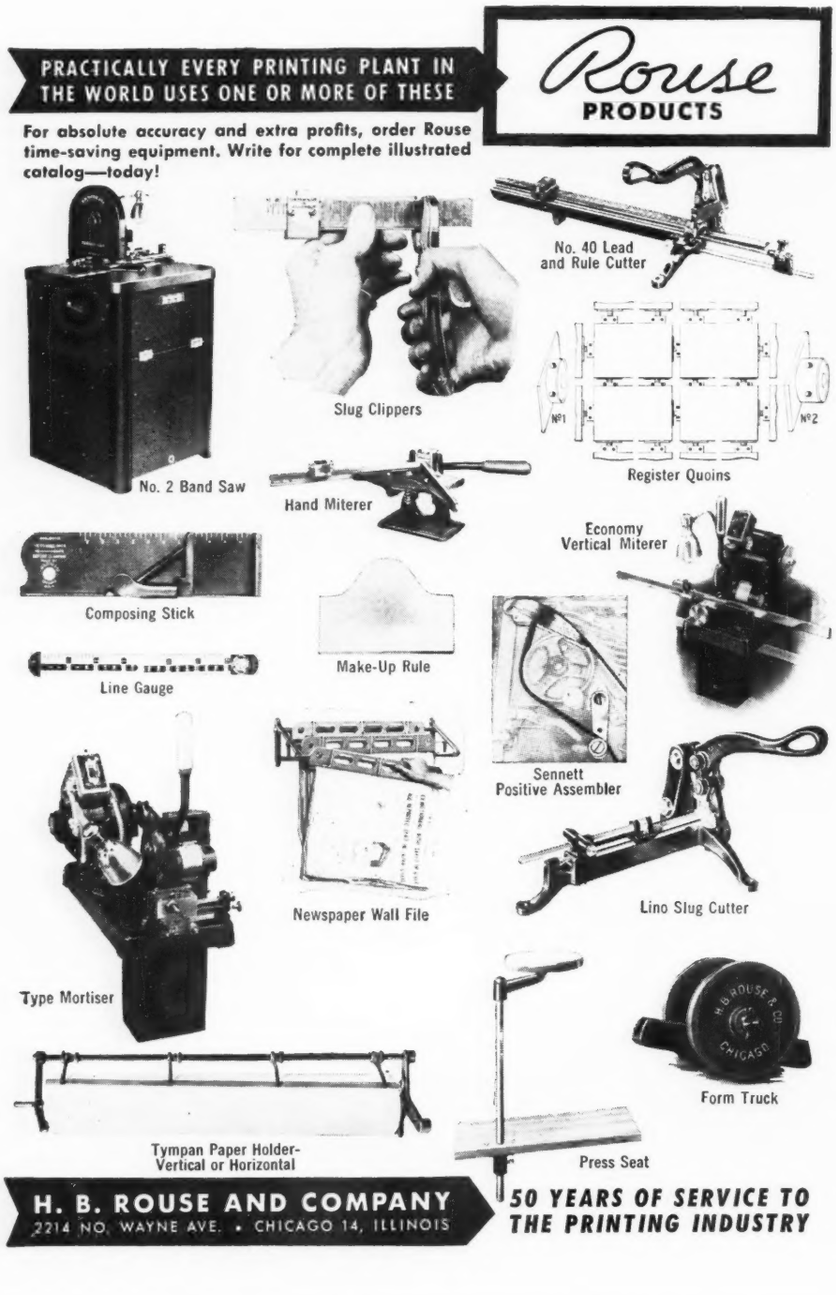
Dust Hazard in the Printing Industry

By DR. W. SCHEWEISHEIMER

INDUSTRIAL dusts composed of fine cuttings of metal type, lead oxide, graphite, and "dragon's blood" (acid-resistant powder) are definite and characteristic hazards to the health of workers in the printing industry. Proper ventilation still remains an ignored problem in many print shops.

Such are the conclusions in Jacob Loft's book on the printing trades, and they give evidence that dust is still playing a major part in the printing industry. Dust is always harmful to the lungs, and the high frequency of tuberculosis among printers in past decades was in part due to this dangerous material. Fortunately the frequency of tuberculosis has decreased greatly in the printing trades. Modern shop technique and hygienic measures in preventing dust hazards are mostly responsible for this noticeable improvement.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Sources of Dust

Here is a short survey on the sources of dust as pointed out by Loft. Molten lead used in casting slugs or plates in printing is kept at temperatures below the volatilization point. Stirring disturbs the film of oxide on the surface of the molten type metal and this is carried into the air if not carefully drawn off by hoods and ventilation ducts. Composing machines and casting mechanisms eliminated distribution of type into cases where they formed oxide dust on their surfaces and contaminated the atmosphere or the finger of compositors.

Nevertheless, Loft says, the typesetting machines brought other lead dust hazards with them. Cuttings of type metal fell in heaps under the machines as the casting mechanism formed the lines of type and were ground into powder and tracked through the composing room by passing workers,—another source of lead dust. Plungers in the wells of metal pots on composing machines had to be removed occasionally to brush off the thick deposits of lead oxide which prevented smooth operation. If done carelessly, brushing of plungers filled the air with lead dust.

Tuberculosis of the lungs was the most common occupational disease in the printing industry at the beginning of the 20th century. Halford Ross has suggested that the "list" which is the black fluffy sustance that collects in compositors' boxes, was a strong contributory factor. It contains much free silica, an irritating material for the lungs. The threat of tuberculosis of the lungs in the printing industry was sharply reduced during the last decade.

Lead Dust

When dust contains lead as it often does in printing establishments, it may create a lead-poisoning hazard. Dust with a heavy lead content accumulates rapidly in the cases from which type is set by hand, unless these cases are cleaned often. An article in Travelers Standard (abstracted in Public Health Eng. Abstr.) advises that this cleaning should be done by vacuum equipment, in order to prevent poisonous lead dust from mingling with the air of the work room and being inhaled by the workers.

Exhaust hoods of ample sizes, therefore, should be placed over linotype and monotype machines, to remove the fumes and minute oxide particles that are given off from the melting pots, and to discharge them outside the workrooms.

Personal cleanliness is necessary, to keep the hands free from lead dust before they touch food. Vacuum systems are highly desirable for cleaning workrooms. If floors are to be swept, they should first be sprinkled or other precautions should be taken in order to avoid raising dust.

All job and stereotype casting machine metal pots, in addition to remelt pots, should be locally exhausted, according to a study by J. F. Keppler and H. E. Baumsted on hygienic conditions

in three metropolitan newspaper plants. All drossing should take place with local exhaust control. The use of air hoses for blowing off the equipment should be perferably eliminated or kept at a minimum. All saws and trimmers, wherever they are located, should be locally exhausted. While these machines are not operated continuously, the operating time is of sufficient length and the amount of lead dust evolved is of such concentration as to constitute one of the major lead hazards in the newspaper industry.

Observations in the Government Print-Office in Washington, D. C., by Allen D. Brandt and George S. Reichenbach have shown that most sources of atmospheric contamination with lead (linotype, monotype, remelt and stereotype) are controlled adequately. The sources which are not controlled adequately are not active all the time. Average weighted exposure for all workers is below the highest allowable concentration of 0.15 mg./m.^{3} of air. The average lead exposure in the monotype casting, stereotype and remelt departments is of no great concern, but high enough that the workers be checked periodically for early signs of abnormal lead absorption.

Loft mentions the high importance of proper sanitation in the printing trades. With lead oxide dust present, a real danger exists in the absence of hot water and soap. The carelessness of workers in eating food in the workrooms with unwashed hands was equaled by the indifference of employers in supplying adequate washing and lunchroom facilities.

Loft gives some interesting figures in this connection. Hot water, soap and towels were provided in less than a quarter of 130 printing establishments investigated in 1917. In 1924, a study showed that 38.7 per cent of 536 plants investigated lacked hot water and only 11.0 percent provided separate lunchrooms. By 1934 only 19.3 percent of a sample of printing employees had the use of separate eating quarters.

Offset Printing Dust

In offset printing work a spray consisting of essentially denatured alcohol, gum arabic and gum tragacanth has come into wide application. In addition, some use may be made of starch and glycerin. According to the Journal of the American Medical Association, anaphylactic asthma (breathlessness due to over-sensitivity) in printers was traced to the sensitizing influence of gum arabic used in these sprays. The difficulty was eliminated by substituting starch for gum arabic. (The printing industry in general now uses a solution containing c.p. starch.—Ed.)

The chief complaints centered about the dust created, since rapid drying of the spray is essential. This means that the alcohol, with the possible content of 5 percent methyl alcohol, is quickly evaporated and is present as vapor. Additional experience may establish the necessity for the installation of an exhaust system to remove both vapors and dusts.

At a meeting of the American Public Health Association, it was recommended that offset drying be accomplished by the rapid running of the wet sheet over a band of flame or other heated surface across the press. The spray favors the rapid dispersion of a fine and inhalable dust with every sheet printed. The disease that arises in occupational and at times makes wholly incapable for this form of printing.

Local preventive measures against dust formation and dust influence are of great importance to the health of the worker. It is the desire of every industry to find the proper means of prevention. And as in every industry, there are decisive differences between various plants in the printing industry. On the whole, the trend toward improvement is obvious and successful.

The death of William E. Herb, 61, Vice President and General Sales Mgr., Gifford-Wood Co., occurred suddenly on July 3 at Hudson, N. Y. following several days of illness of a critical heart ailment.

Arthur F. Medling has been elected President of the Edwards & Deutsch Lithographing Co., Chicago, succeeding Clarence Fairbanks who has resigned and is retiring from active business.

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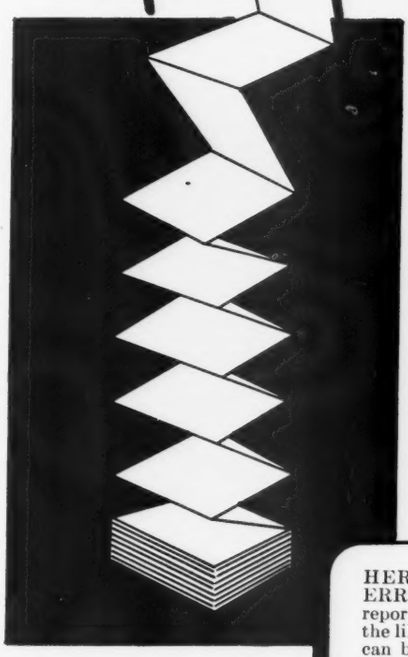

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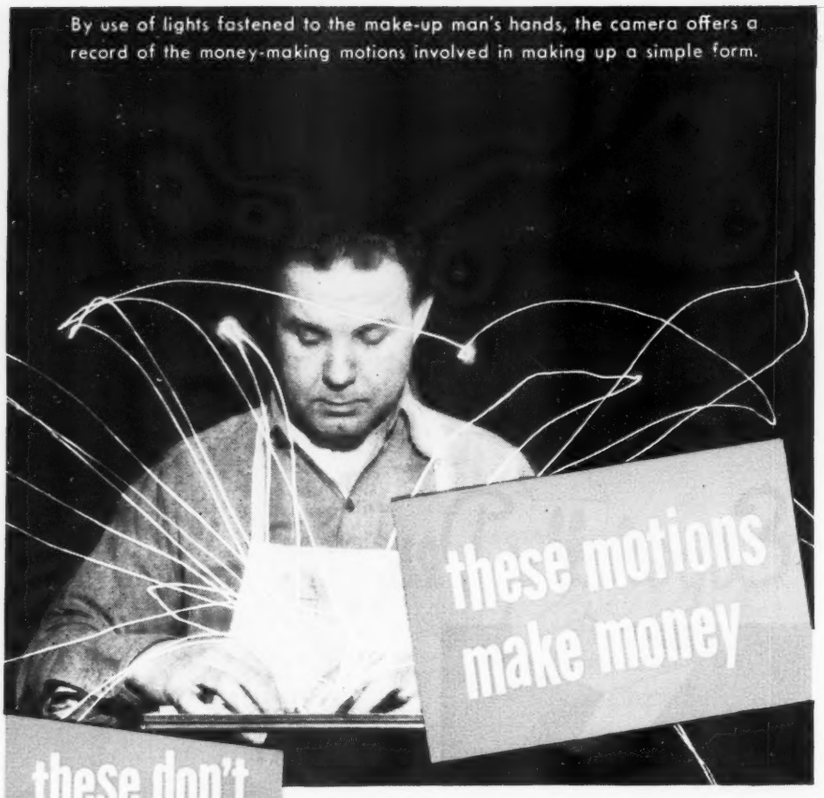

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IN recent months the laboratory of the Lithographic Technical Foundation has analyzed a number of problems from Eastern, Western, and Midwestern lithographers which were out-of-the-ordinary in that they all had the same cause.

In the Foundation's preliminary investigations, it was found that most work in these plants was printed on offset paper and through years of trial and error each plant had reached a certain degree of standardization in making halftones, plates, and in printing.

But jobs that called for coated stock usually brought troubles. The printing lacked crispness, shadows choked, tones tended to "soot and snow." After considerable fussing with the press and the plate, images became ragged and finally walked off. In each case, the quality of the plate was blamed.

According to LTF, the basic cause of the trouble in these plants is a fact that is not too widely known or appreciated; namely, that good lithography demands coordination. Every lithographic job is a cooperative venture of all departments and more times than not, a change in technique or materials in one department demands compensating changes in another.

In the problem cited here, plates were being blamed for poor printing when the true cause was a switch from offset to coated paper with no compensation in the photographic halftones.

The fact that coated paper prints sharper than offset is well known. In these plants, however, LTF learned that the photographer was not told when jobs were to go on coated stock. He thus made

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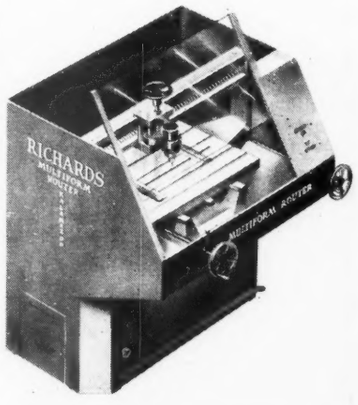

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halftones for the coated stock the same as he did for the usual offset stock.

The resulting plates, of course, were entirely suitable for offset stock but printed flat on coated stock. Instead of making a new plate from a new halftone having the wider range of tones that coated stock can print, an attempt to improve the contrast of the printing was made by increasing the pressure of the back cylinder.

At first, this appeared to help but the dots in the shadows and middletones soon began to slur. The slurred dots on the printed sheet were misinterpreted as dot spread on the plate so more acid was put in the fountain. This seemed to correct the "plugging" for the moment but the excess acid attacked the image causing its raggedness and eventual blinding.

It is risky business for a pressman to try to print something that isn't on a plate and he should avoid the temptation.

Platemaking and printing should be standardized operations and with LTF's most recent developments such as pre-Cronak, post-Cronak (or post-Brunak for aluminum), the Sensitivity Guide, and the use of cellulose gum solutions, this aim is quite possible and practical and is not just a statement of "theory". Once this is accomplished, the tone values required for any particular job is the photographer's problem. Innumerable cases have shown that attempts to compensate for deficiencies in halftones in either platemaking or printing do little more than invite trouble.

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Static Electricity

(Continued from Page 47)

paper. When printing on plastics, this natural remedy is not present, and static generation is the rule rather than the exception. Unfortunately, little can be done to reduce the actual generation of static, although occasionally it might be possible to reduce static by changing the nature of the surface which paper may touch. For example, rolls, tables, slides, or rods may be covered with materials close to paper itself in the triboelectric series. Since no valid triboelectric series is available, such a material would have to be picked by trial and error. One expedient is to coat the object touched by paper with the paper itself. This is about as close as it is possible to come to selecting a material similar in triboelectric properties. But even this may not prevent the generation of static.

If, as is usually the case, the generation of static charges cannot be prevented, such charges must be eliminated by conducting them either along the web of the paper, or out into the air. By far the most practical path is along the paper itself. This path is available only when the paper is made a fair conductor of electricity. Such conductivity can be induced practically by increasing the moisture content of the paper.

Paper can be made reasonably conductive of electricity by storing it and using it in air at relative humidities of more than 40 per cent. Relative humidity of the air has no effect other than to increase the moisture content of the paper and it takes a long time for moisture to move from air into solid stacks of paper. *Air is a practically perfect electrical insulator, no matter what its moisture content.* Very little more need be known about this method of static elimination if it is really understood that: (1) it is the moisture in the paper and not the moisture in the air which eliminates static, and (2) water moves very slowly from air to paper stored in rolls or stacks. Proof of the efficiency of this method of static elimination is the almost complete absence of static problems during the summer months in the more humid parts of the world.

The position of the manufacturer of paper in this matter of static generation should be considered. There appears to be a popular notion that the static charges which bother the printer are left in the paper by the manufacturer. Possibly this is concluded because of the usual generation of a large amount of static as dry paper is being rolled in manufacturing plants. Days or weeks usually pass between the time the paper is packaged and when it is actually used for printing. Assuming any reasonable value for the resistance of the paper, it is very unlikely that any electrical charges remain in a stack or roll of paper for such periods of time.

The manufacturer is partially responsible for the moisture content of the paper delivered to the printing press. However,

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other factors affect the retention of moisture in paper. Paper may leave the plant having enough moisture to assure it being free from static under almost any conditions. Yet, if stored for months in extremely dry air, paper may lose much of its moisture before reaching the press.

Since the introduction of so many plastics, metal foils, and other packaging materials which are almost impervious to moisture, the interesting possibility exists that the manufacturer, possibly for a small additional charge, might package paper so securely that its moisture content would not vary, no matter how it was stored. This, plus the maintenance of pressrooms at proper humidities, should solve almost all of the problems of static.

If it is not possible to drain static charges from paper by making the paper conductive, then the only path left over which the electrical charges can be removed is the air surrounding the paper. As pointed out earlier, air is one of the best possible insulators of electricity, thousands of times better than very good insulators such as polystyrene. This insulating ability of air is not affected by the presence of moisture. Air can, however, be ionized to make it fairly conductive, at least conductive enough to eliminate static on paper.

Air can be ionized by the emanations of radioactive substances and this forms the basis of several effective commercial eliminators. Flames also create ionization. The ions so formed continue to exist above the flame and they can be used to eliminate static.

Another group of commercial and home-made static eliminators depend on the occurrence of ionization in the air around sharp points or fine wires. If, for example, a sharp point of metal is brought into the electrical field near an electrically charged body, the geometry of the electrical field is altered, and a very high potential gradient is created near the sharp point. This gradient is so high that the few ions produced by cosmic rays or by the natural radioactivity of surrounding objects are accelerated so quickly that they generate many more ions, and the whole process cascades to produce a large number of ions. So long as the electrical field is maintained, this ionization continues and the ions so created will flow out and neutralize the charges causing the electrical field. Because of this effect, fine points or fine wires tend to eliminate static charges. However, this process will never remove all of the static from an object. After a portion of the charge has been removed, the potential of the object will be so reduced that no further ionization will occur and the whole process will stop. Thus, simple arrangements of tinsel will never eliminate all static from paper.

This concentration of electric field and consequent ionization is used in a number of effective commercial eliminators, most of them using a high potential applied to the points, either of direct current or alternating current, to increase the amount of ionization.

Ionization also can be created in air by the action of ultraviolet light and by X-rays, but these methods are usually too elaborate for practical applications.

Improvements in Static Elimination

The elimination of static appears to be a relatively stagnent field. The simpler manifestations of static are understood and the obvious remedial equipment is available, although at a price which prevents its being used as extensively as it would have to be used to eliminate static at every point in the press. Static is not a major problem to any printer; however, delays and spoilage caused by static probably constitute a sizable loss to the industry as a whole.

In spite of the advances made, static still poses many unsolved problems. A systematic research effort into the principles underlying static should uncover a number of facts which might have considerable economic value to the whole of the printing industry.

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(Continued from Page 49)

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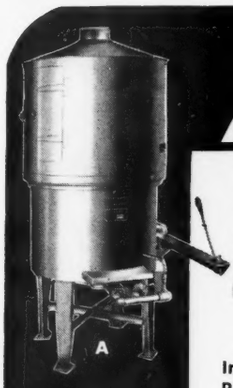

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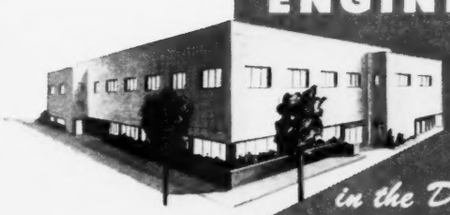

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tions. Physicists describe the situation as "low surface tension," but to the layman it means that when another piece of metal is placed on a chromium surface or on babbitt, that other metal *slides easily*. And this is more true of chrome than of babbitt. Low surface tension allows creation of but a minimum co-efficient of friction—and reduced friction lessens wear.

Three Friction Sources

With a gravure cylinder it is apparent that the doctor blade is but one of three sources of friction. The others are the friction of the paper on the cylinder surface and the friction of ink being lifted from the cells (hence the necessity of plating the sides and bottoms of the cells). These frictions are often aggravated by tremendous pressure from the impression cylinder. Although press designers are at work improving automatic control and speeds of pressure, printing cylinders meanwhile are often subject to abuse.

These problems of friction had to be considered by Cro-Plate engineers when designing fixtures for compounding baths when plating gravure cylinders. Concentricity must be preserved within 0.0001 in. So the fixtures are equipped with shields that prevent high density at edges, also "lips," etc. The anode is curved according to the diameter of the roll. This anode purposely follows the contour of the surface—where wear is heaviest—so that the surface gets the greatest deposit. The sides and bottoms of cells receive proportionally less because they experience only one source of friction—the removal of ink. This variation, however, is minute. The thickness of the chrome plate is only 0.0003 in., which means the overall diameter of a cylinder is increased 0.0006 in. Because of the accuracy of the Cro-Plate methods (gauges are brought to final size within 0.00005 in. tolerance) a set of color cylinders, if kept accurately identical up to the plating stage, can be delivered with identical diameters after plating.

Density Compensation

Because chrome plating is affixed to the sides and bottoms of ink cells, the carrying capacity of these cells is slightly reduced. This can be compensated for in two ways: Either the cylinder can be etched slightly deeper, or the ink formula can be changed slightly to increase density.

The cost savings of chrome-plated cylinders are apparent wherever one cylinder can be made to finish a run that would ordinarily require two—and you must also consider the elimination of down time. Yet at the same time quality is improved. When the chrome is evenly distributed, and the size of the cells is kept in proportion, there will be less complaints from buyers about lightened areas. There will be less likelihood of breakdown between cells in dark areas, and consequently, less complaints about muddiness. This is particularly true on color work. Constant diameter between color cylinders will improve register. A printer can deliver better quality.

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ABC of Offset

(Continued from Page 66)

ating the contrast, to compensate for detail and contrast losses suffered in production of the halftone negative.

It is worth noting at this point, that in the halftone, solids are not *solid*, and highlights are not *clear* or *white*. This, because of the *flash dot* in shadow areas,

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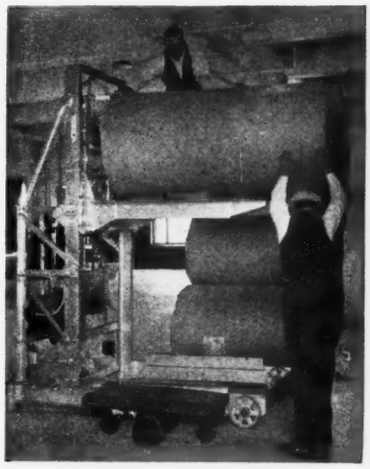

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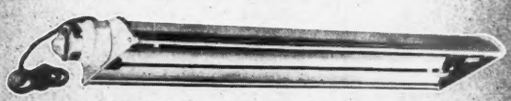

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which is incorporated in the image by an independent exposure to a white curtain or flashlight unit; and because of the tiny transparent dots which appear in the highlight areas.

The halftone negative is then subjected to the dot etching procedure or operation. Selected areas of the negative are staged with a protective varnish, and the undesirable flash dots are etched away, thus rendering the shadow areas and the specific detail absolutely clear and transparent.

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After removal of the protective varnish, the highlight areas are intensified, either manually or by chemical manipulation.

Whether for same size reproduction, enlargement or reduction, the negative is re-photographed, rather than contact printed to effect the halftone positive, which theoretically is ready for preparation for the plate maker.

Other Indirect Procedures

To the list of indirect processes can be added what is referred to as the masking process.

If the reader considers the foregoing described processes to be complicated, he can expand his wonder by considering this one, which is used primarily in color reproduction.

In this process, a complete set of continuous tone separation negatives is photo-graphically produced.

The color artist or correctionist checks the entire set for balance and tonal quality. He then corrects the respective negatives in preparation for making the masks. The selected negatives are then contact printed to produce continuous tone images of such density as to either flatten or neutralize selected areas, while permitting other areas to be exposed without any appreciable alteration.

Depending upon the amount of correction necessary, the original negatives are cleaned off, and the combined densities of negatives and masks are balanced.

The masks are then checked for dimension, register marks and necessary cropping. All areas in the negative to be eliminated are painted solid on the mask with opaque, and with graphite pencils, or stain.

After all hand work is accomplished, the cameraman places the respective masks in close contact and register with their selected color negatives, for example, the mask made from the blue negative is placed in contact with the red negative, etc.

These combinations are then photographed, producing a set of corrected continuous tone positives.

Because of possible error due to the human element, the positives are inspected by the artist who makes additional corrections if they are needed.

If proved to be satisfactory, the continuous tone positives are re-photo-

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graphed for the production of the halftone negatives and subsequent final halftone positives.

Despite the corrections afforded by the masking method, the etching operations and opaqueing of the halftone images must be performed before printing plates can be made.

For Projection

For extreme enlargements such as those needed in the production of 24 sheet posters, any of the foregoing processes can be utilized with this exception, that the procedures when utilized, require frequent contacting of halftone positives to produce halftone negatives with stencil like, sharp and opaque dot formations. This is a definite requirement where extreme emphasis must be directed to the production of high grade work. Extreme contrast in the negative image is a requisite.

The transparent areas must be absolutely clear and transparen and the dots must be intensely black, sharp and opaque.

Why Extreme Contrast?

Remember the Law of Inverse Squares? "Transmitted or projected light dimenished in brilliance proportionally to the square of the distance light must travel from its point of origin or its source."

Because the printing plate sensitizers are not as sensitive to light as are the emulsions on photographic plates and films, and since the action involves hardening of the sensitizer by the action of light, it is evident that a free transmission of light must be afforded.

Detail in the projected image is dependent upon the amount of activating light rays reaching the sensitized surface of the printing plate and is directly affected by the nature of the negative dot formation.

If the dot is of variable density, the resulting image will be fuzzy or woolly in appearance. The same fuzziness can be obtained if the projected image is not in focus. No matter how sharp and opaque the dot on the negative may be, the projected image of the same dot will be fringed with a fuzzy halo. This fuzzy effect is sometimes called light creep.

In producing high grade reproductions by the projection method, each negative should embody everything necessary to effect a correct and true image on the printing plate. Little or no additional work, corrective or otherwise, should be required on the projection negatives.

Improvements

Increased demands for color reproductions has resulted in intensified research by manufacturers of materials and supplies, to assist the printer and lithographer to make these reproductions possible to a higher degree of perfection.

To meet the increased demands, manufacturers of equipment and some individuals have contributed much to increased production by indirect process.

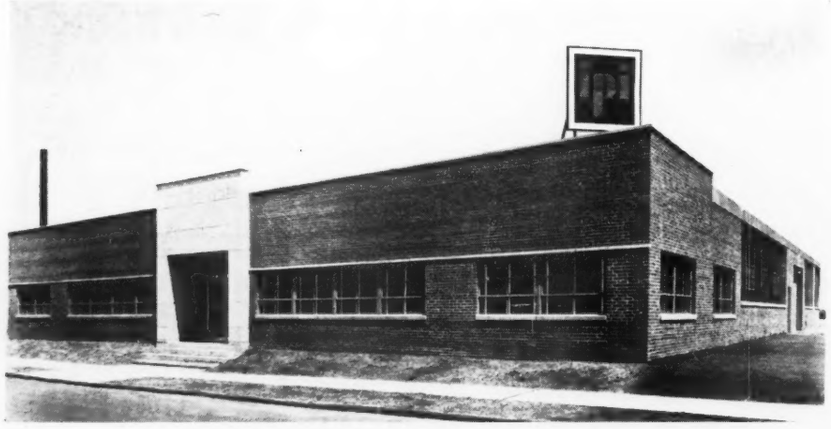
Of the newest additions to indirect methods of reproduction is the development of the electronic color scanner, by the publishers of *Time* and *Life* magazines.

Despite all of the research leading to improved color reproduction and increased production to meet an ever growing demand, the transfer of an inked image from the printing plate onto the material being processed has undergone little or no change.

We note the changes in presses, plates and other equipment and material, but, as long as *halftone* remains an integral part of reproductive procedures we must continue to use halftone dots.

How the halftone dots affect color reproduction is of prime importance. To better understand this phase of the subject, we must know the angles. These, with the Why, Where, When and How of the halftone dots in color will be discussed in the next installment.

(To Be Continued)



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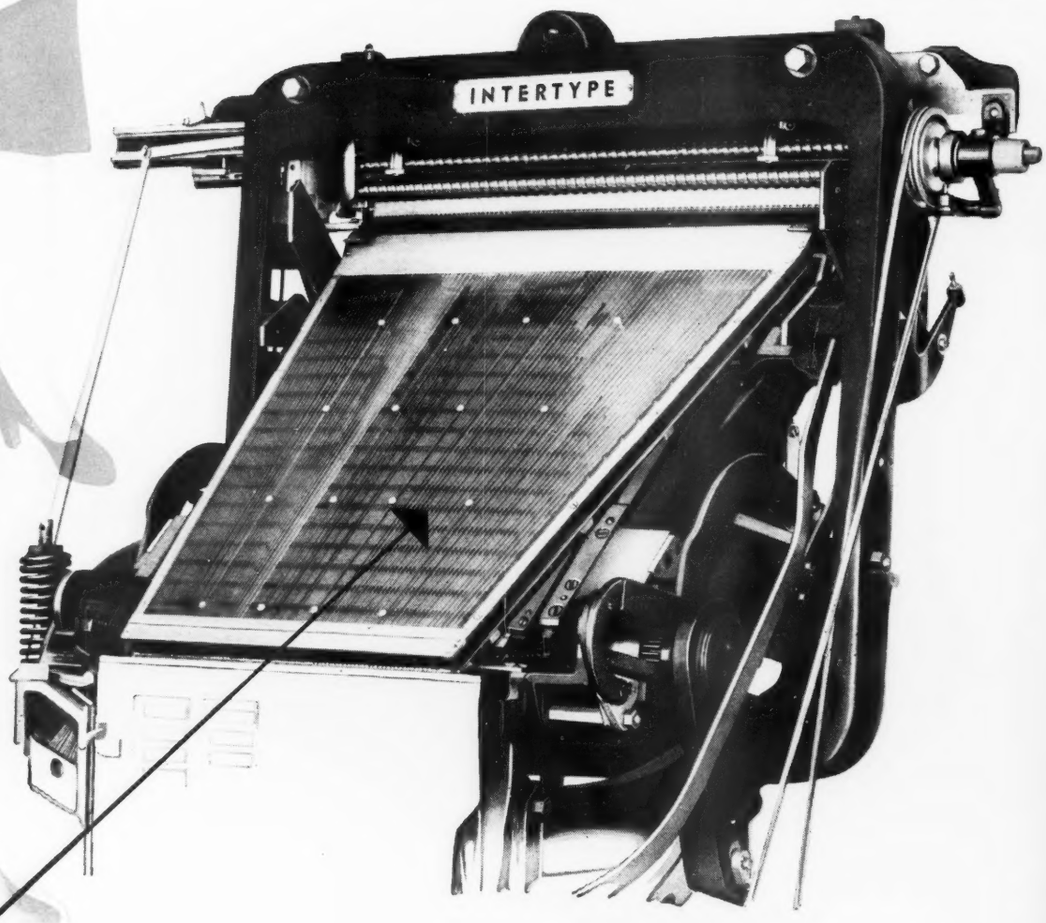

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